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Kodak

Kodak **DryView** 8800 Multi-Input Manager

Service Manual

Revision History

The original issue and revisions of this manual are identified as follows:

Issue Date (Rev. A): 01/95 (Rev. B): 03/96 (Rev. C) 09/96 (Rev. D) 05/97 (Rev. E) 02/98 (Rev. F) 03/99

The conversion to Kodak content and format included in this revision has resulted in a complete reprint of the existing Service Manual.

All pages are dated March, 1999

Warnings and Cautions for 8800

Safety Instructions

Read and understand all instructions before using.

⚠ WARNING 

This equipment can be an explosive hazard. Do not use in the presence of flammable anesthetics, Oxygen, or Nitrous Oxide.

⚠ WARNING 

This equipment is operated with hazardous voltage which can shock, burn, or cause death.

Remove wall plug before servicing equipment. Never pull on cord to remove from outlet. Grasp plug and pull to disconnect.

Do **not** operate equipment with a damaged power cord.

Do **not** use an extension cord to power this equipment.

Position the power cord so it will not be tripped over or pulled.

Connect this equipment to **a grounded outlet**.

Warnings and Cautions for 8800 (Continued)

⚠ WARNING

Not Protected Against Ingress of Liquids, including bodily fluids.

⚠ WARNING

For Continued Protection against Fire, Replace Fuses with only the Same Type and Fuse Rating.

⚠ CAUTION

General External Cleaning: This equipment may be cleaned with a damp cloth using water with mild detergent, or commercial electronic equipment cleaner.

⚠ CAUTION

This equipment is intended to connect to other medical devices. Installation and service maintenance are to be performed only by qualified service personnel. The equipment must be installed no closer than 1.8 meters from a patient bed or chair.

Warnings and Cautions for 8800 (Continued)

⚠ CAUTION

Do not substitute or modify any part of this equipment without approval of Eastman Kodak Company.

⚠ CAUTION

This equipment generates, uses, and can radiate radio frequency energy, and if not installed by qualified service personnel and used in accordance with the User Guide, may cause interference to radio communications and other electronic devices. Operation of this equipment in a residential area may cause interference, in which case the user at their own expense will be required to take whatever measures may be required to correct the interference.

Warnings and Cautions for External Interface Box Accessories

Read and understand all instructions before using.

Classifications

UL Classified

File Number E183646

Control Number 9R46

Medical Equipment

UL 2601-1 CAN/CSA No. 601.1

⚠ Classified by Underwriters Laboratories Inc.® With Respect to Electric Shock, Fire, Casualty and Medical Hazards only in Accordance with UL 2601-1, CAN/CSA C22.2 No. 601.1 and IEC 601.1.

Warnings and Cautions for External Interface Box Accessories (Continued)

⚠ WARNING

This equipment can be an explosive hazard. Do not use in the presence of flammable anesthetics, Oxygen, or Nitrous Oxide.

⚠ WARNING

This equipment is operated with hazardous voltage which can shock, burn, or cause death.

Remove wall plug before servicing equipment. Never pull on cord to remove from outlet. Grasp plug and pull to disconnect.

Do **not** operate equipment with a damaged power cord.

Do **not** use an extension cord to power this equipment.

Position the power cord so it will not be tripped over or pulled.

Connect this equipment to **a grounded outlet**.

Warnings and Cautions for External Interface Box Accessories (Continued)

⚠ WARNING

Not Protected Against Ingress of Liquids, including bodily fluids.

⚠ WARNING

For Continued Protection against Fire, Replace Fuses with only the Same Type and Fuse Rating.

⚠ CAUTION

This equipment generates, uses, and can radiate radio frequency energy, and if not installed by qualified service personnel, may cause interference to radio communications and other electronic devices. Operation of this equipment in a residential area may cause interference, in which case the user at their own expense will be required to take whatever measures may be required to correct the interference.

⚠ CAUTION

General External Cleaning: This equipment may be cleaned with a damp cloth using water with mild detergent, or commercial electronic equipment cleaner.

Warnings and Cautions for External Interface Box Accessories (Continued)

⚠ CAUTION

Do not substitute or modify any part of this equipment without approval of Eastman Kodak Company.

 Type B Applied Part

Agency, Regulatory and CE Marking Compliance

All agency, regulatory and CE marking information may be found in the User’s Guide for this model.

Section 1 – Specifications

1-1. Dimensions

Height:	69 cm [27 in]
Width:	51 cm [20 in]
Depth:	70 cm [27.5 in] (Front door closed) 112 cm [44 in] (Front door open)
Weight:	68 kg [150 lbs] (Unpackaged, fully loaded)

1-2. Electrical

Voltage:	115/230 ± 10% VAC
Frequency:	60/50 ± 3% Hz
Current:	8.0/4.0 Amperes (Maximum)

1-3. Environmental (Operating)

Temperature:	15° to 40° C
Humidity:	15% to 90% RH, Non-condensing
Magnetic Field:	50 Gauss (Outside of a magnetically shielded room)
Noise:	60 dBA (Maximum)

1-4. Control Source Options

969 HQ User Keypad

- Main operator control
- Controls image formatting, acquisition, and printing
- Controls image processing parameters (contrast, density, border, rotation, etc.)

RS232/RS422 Host Control (Kodak Protocol Standard)

- Use is dependent on modality source
- Controls image formatting, acquisition, and printing
- Contrast, density, border, and film destination selections are made via the 8800 local panel or by host commands
- Two control source user inputs (any type) per input module supported

1-5. Image Input Options

Digital Interface (Kodak Protocol Standard)

- One or two parallel, RS422 inputs – Host to Digital EIB
- 8.75 Mpixels/sec data transfer rate (maximum)
- Fiber optic connection – Digital EIB to 8800

Video Interface

- One or two RS170 compatible inputs – Host to Video EIB
- Real-time frame grab
- Interlaced or non-interlaced
- 5 MHz to 110 MHz frequency response
- One or two External Pixel Clock inputs (Host to Video EIB) or Optional Phase Lock Loop (PLL) module provides 7.5 MHz to 110 MHz internal clock
- Fiber optic connection – Video EIB to 8800
- One Video or Digital EIB input per input module supported

1-6. Printer Output Options

- 969 HQ Dual Printer (one or two)
- 8700/8500 Dual Printer (one or two)
- 8300 Laser Imager (one or two)
- Any two of the above printers (different types)
- 8 input modules/16 users maximum with one output module for one dual printer
- 7 input modules/ 14 users maximum with two output modules for two Dual Printers
- Fiber optic connection (8800 to Dual Printer)

Section 2 – Installation

2-1. Unpacking

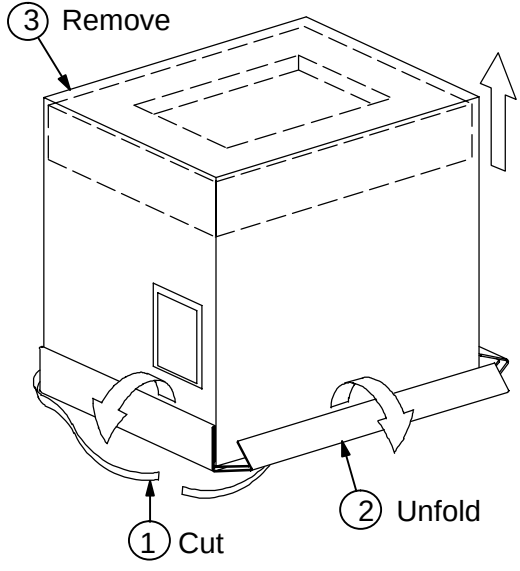


Figure 2-1.

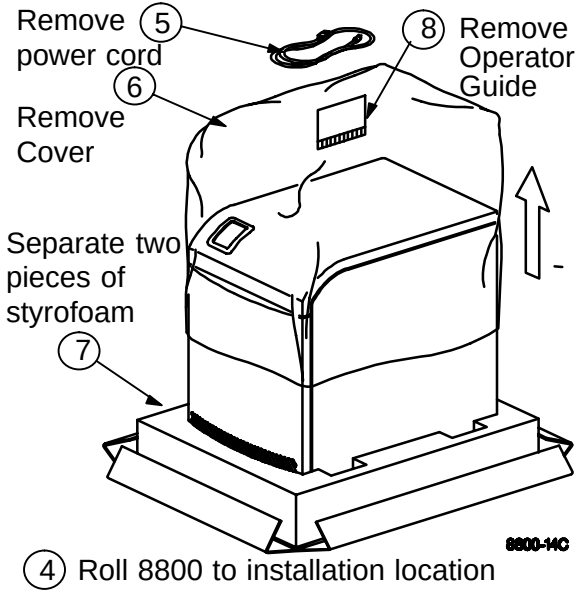


Figure 2-2.

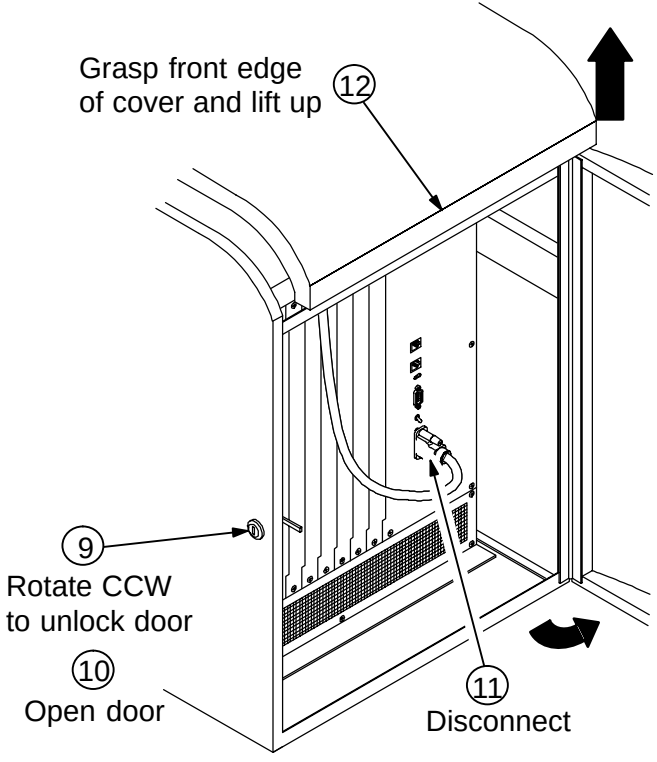


Figure 2-3.

Note

Because the top cover is secured by friction-fit pins, a high degree of upward force must be applied when removing the cover (Step 12).

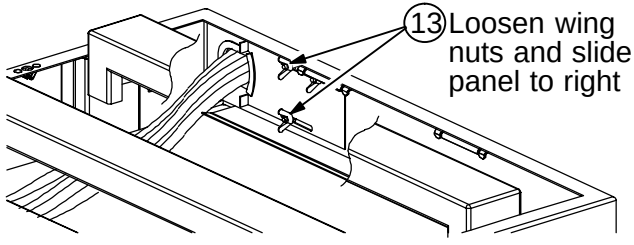


Figure 2-4.

Note

After you have connected all cables to the 8800, as described in the following pages, slide the panel back to the left and tighten the wing nuts.

2-1-1. MOV Board Removal for O.U.S. Installations

The MOV board must be removed if the 8800 is installed in the UK, Austria, Belgium, Denmark, Finland, Norway, or Sweden.

Complete the following steps to remove the MOV PWA:

1. Disconnect power.
2. Open the rear panel.
3. Remove the MOV ground wire and discard (replace nut on stud for the other ground) as shown in Figure 2-6.
4. Remove the short 2-wire jumper between the breaker switch and the MOV board and discard.
5. Disconnect the blue and brown power supply wires on the MOV end.
6. Remove the MOV board from the bracket and discard the MOV (leave the bracket in place).
7. Reconnect the blue and brown power supply wires at the breaker switch as shown in Figure 2-7.
8. Close the rear panel.
9. All Outside U.S. (O.U.S.) 8800 shipments are sent with a label (78-8094-9085-3 Label MOV). See Figure 2-5. Place this sticker somewhere on the back of the unit near the power switch.

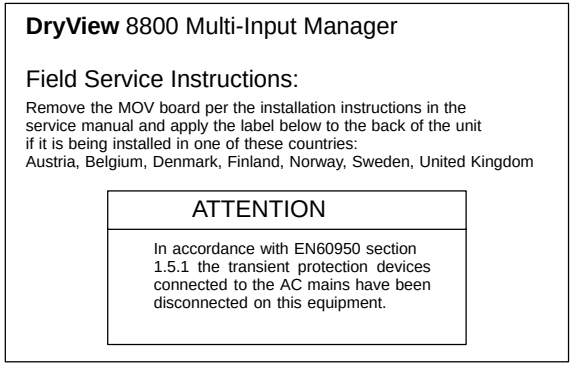


Figure 2-5.

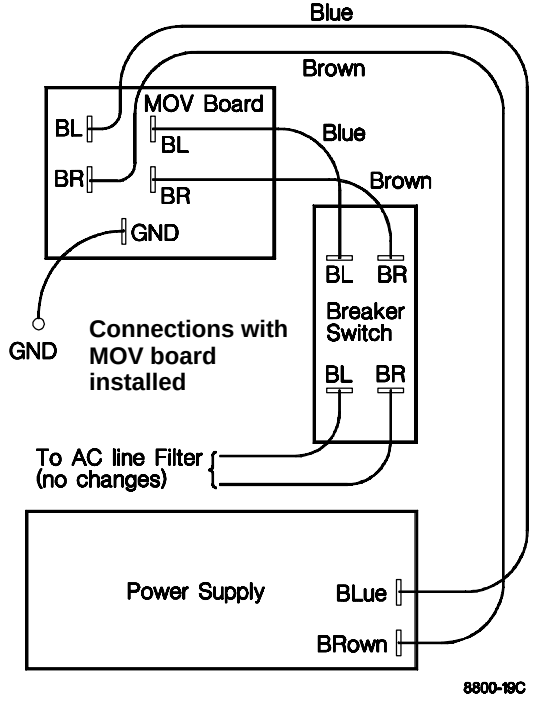


Figure 2-6. Connections with MOV Board

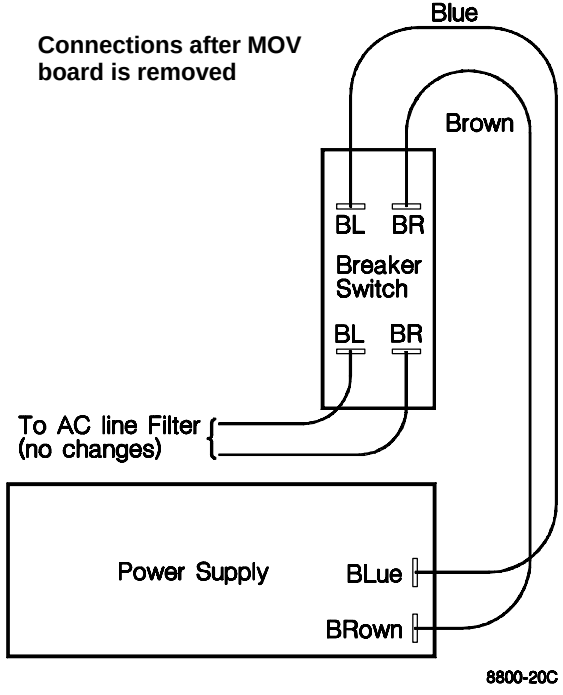


Figure 2-7. Connections After MOV Board is Removed

2-2. Switch and Jumper Settings

2-2-1. Output Module

NVRAM Size

Jumper J1 specifies the size of NVRAM installed on the output module. This jumper should be factory set for 2K NVRAM.

Note

EPROM U31 must be at version 3.05 or greater in order to support 8700/8500 Dual Printer or 8300 Laser Imager connection to the 8800.

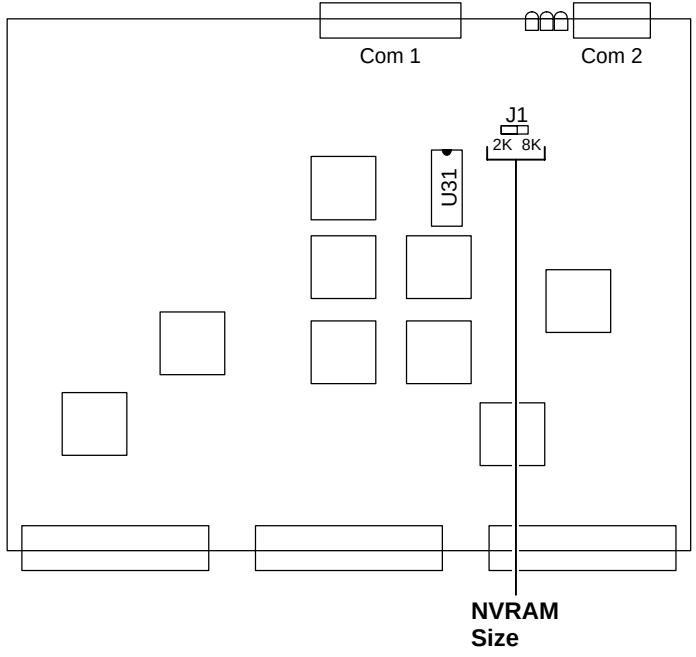


Figure 2-8.

2-2-2. System Controller PWA

Jumper Settings

All the jumpers on the system controller should be factory set as shown in Figure 2-9.

Note

EPROM U1 and U2 must be at version 5.0 or greater in order to support 8700/8500 Dual Printer or 8300 Laser Imager connection to the 8800.

System Controller Reset

During troubleshooting, the system controller can be reset by pressing and releasing the Reset switch (rather than power cycling the 8800). A reset causes all images in memory to be lost.

System Controller NVRAM Initialize

Whenever a new system controller is installed, initialize the system controller NVRAM as described below, then set the system clock via MPC.

1. Press the Reset (red) and Abort (black) switches simultaneously.
2. Release the Reset switch.

3. Wait until the red LEDs turn off.
4. Release the Abort switch.

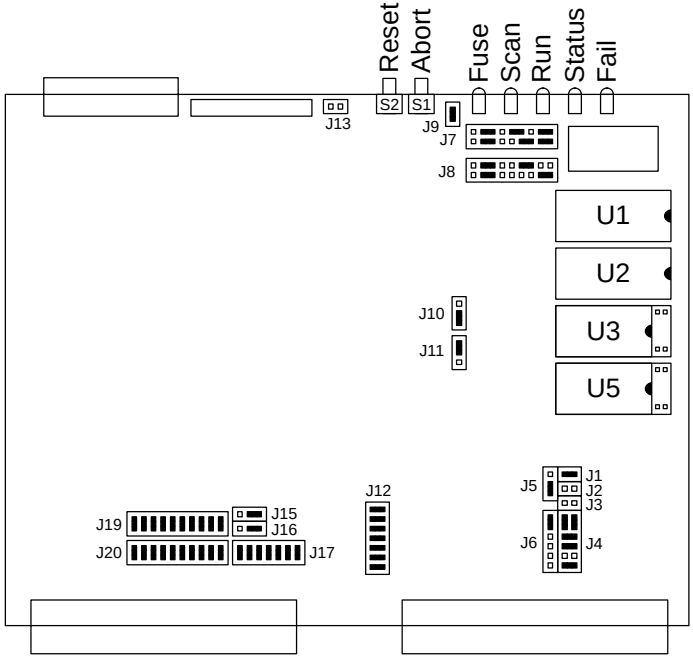


Figure 2-9.

2-2-3. 32 MB Input Module
(Copper user inputs)

Note

Refer to Figure 2-10 (on page 2-9) for jumper locations.

Transfer Clock Speed

Jumper E1-E2-E3 is used to select either single (10 MHz) or dual (12.5 MHz) transfer clock speed.

Single transfer means that one byte of data must be transferred for each pixel; this is used when the input pixel width is 8 or 9 bits per pixel.

Dual transfer means that two bytes of data must be transferred for each pixel; this is required when the input pixel width is 10, 11, or 12 bits per pixel.

If a VEIB is connected, the jumper must be set to E2-E3 (8- or 9-bit pixel width). This is the factory default setting.

If a DEIB is connected, the jumper must be set according to the pixel width. To determine the pixel width used by the digital image source, refer to the OEM specifications, contact the OEM site engineer, or contact the National Service Center. For an 8- or 9-bit pixel width, set the jumper to E2-E3. For a 10-, 11-, or 12-bit pixel width, set the jumper to E1-E2.

Note

For modalities utilizing 10-, 11-, or 12-bit pixels, a 12-bit input module must be used (12-bit input modules must be ordered).

NVRAM Size

Jumper E4-E5-E6 determines the size of NVRAM installed on the input module. All 32 MB input modules have 8K NVRAM. The jumper should be factory set to E4-E5.

Input Module Type

Jumpers P4 through P7 determine the number of bits (9 or 12) of image memory used for each pixel. Jumpers P9 and P10 determine the memory size (in megabytes) of the input module. The table below lists the factory settings for each type of input module.

Input Module Type	P4	P5	P6	P7	P9	P10
32 MB, 9 Bit (78-8077-4146-3)	OFF	ON	ON	ON	ON	OFF
32 MB,12 Bit (78-8063-3959-0)	OFF	OFF	OFF	OFF	ON	OFF

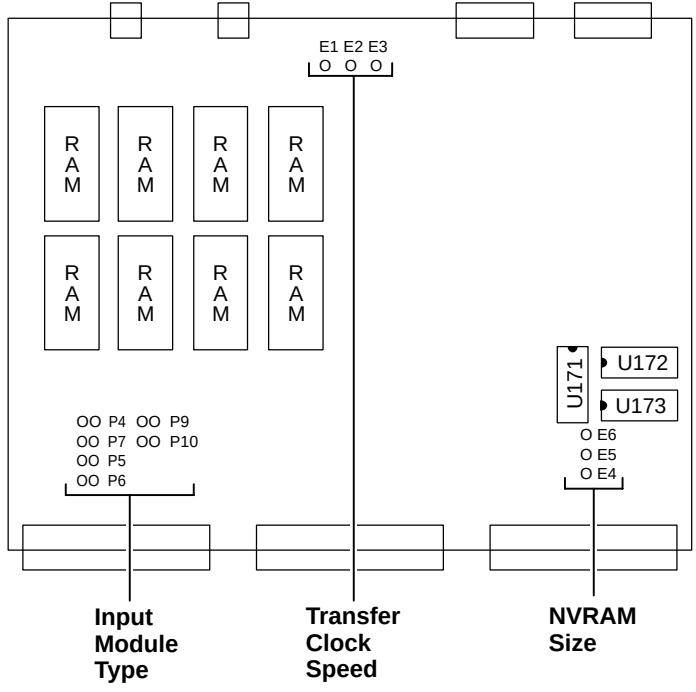


Figure 2-10.

2-2-4. 64 MB Input Module
(Copper user inputs)

The information in this section applies to 64 MB Input Module part number 78-8077-4020-0. This board is now obsolete, replaced by a new input module with fiber optic user inputs.

This board can be used only with a 969 Dual Printer. This board requires System Controller firmware prior to version 4.0.

Refer to Figure 2-11 (on page 2-11) for jumper locations.

Transfer Clock Speed

Jumper EC1-EC2-EC3 is used to select either single (10 MHz) or dual (12.5 MHz) transfer clock speed.

Single transfer means that one byte of data must be transferred for each pixel; this is used when the input pixel width is 8 or 9 bits per pixel.

Dual transfer means that two bytes of data must be transferred for each pixel; this is required when the input pixel width is 10, 11, or 12 bits per pixel.

If a VEIB is connected, the jumper must be set to EC2-EC3 (8- or 9-bit pixel width). This is the factory default setting.

If a DEIB is connected, the jumper must be set according to the pixel width. To determine the pixel width used by the digital image source, refer to the OEM specifications, contact the OEM site engineer, or contact the National Service Center. For an 8- or 9-bit pixel width, set the jumper to EC2-EC3. For a 10-, 11-, or 12-bit pixel width, set the jumper to EC1-EC2.

Input Module Type

Jumper pairs EA, EB, ED, EE, EF, and EG determine the number of bits (8 to 12) of image memory used for each pixel and the memory size (in megabytes) of the input module. All the jumper pairs should be open with the exception of EB, which should have a jumper installed.

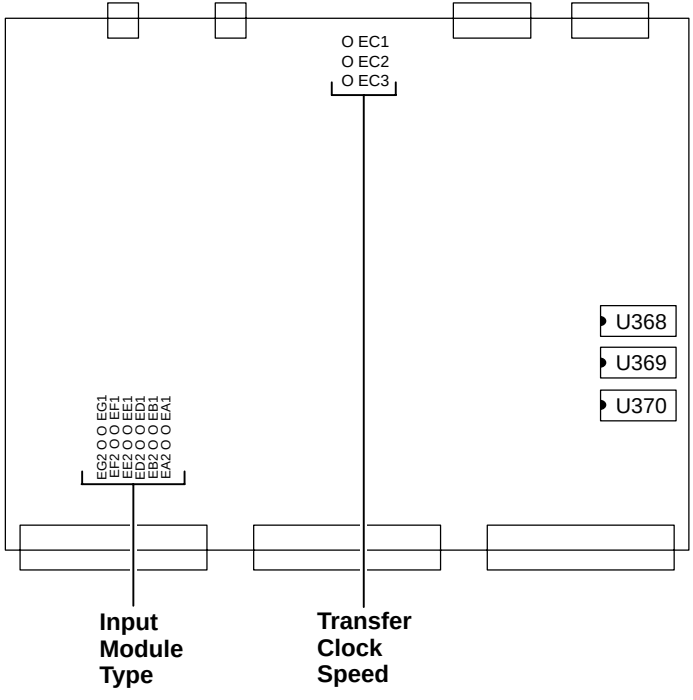

O EC1
O EC2
O EC3
U368
U369
U370
EG2 O O EG1
EF2 O O EF1
EE2 O O EE1
ED2 O O ED1
EB2 O O EB1
EA2 O O EA1
Input Module Type
Transfer Clock Speed

Figure 2-11.

2-2-5. New Input Modules
(Fiber optic user inputs)

Background

The four input modules listed below have fiber optic input connectors for both image data and user comm inputs. Only fiber input cables can be used with these modules. Figure 2-12 shows the board layout.

Input Module Type	Service Part Number
32 megapixel x 9-bit	78-8094-9132-3
32 megapixel x 12-bit	78-8094-9136-4
64 megapixel x 9-bit	78-8079-9798-2
64 megapixel x 12-bit	78-8079-0735-3

The 64-bit versions of this module can be used only with IMS System Controller firmware V4.0 or above.

Nine-bit versions of the board are used with video image sources or with digital image sources that have 8- or 9-bit pixel widths. The 12-bit versions are required for digital image sources with 10-, 11-, or 12-bit pixel widths. 12-bit versions can also be used for video images or 8- or 9- bit digital images.

Single/Dual Transfer Jumper

There is just one configuration jumper on these modules. Jumper pins W9-1/W9-2/W9-3 select either *single* (10 MHz transfer clock speed) or *dual* (12.5 MHz) transfer mode. Single-transfer mode is always used for video image sources and for digital image sources with 8- or 9-bit pixel widths. Dual-transfer mode is used only for digital image sources with 10-, 11-, or 12-bit pixel widths. In these cases the DEIB transfers 2 data bytes to the input module for each pixel.

Jumper Positions:

- W9-1 to W9-2 — Dual Transfer
- W9-2 to W9-3 — Single Transfer (factory setting)

Setting the Single/Dual Transfer Jumper

1. For 9-bit modules: Check that the Single/Dual jumper is in the Single position (shorted across W9-2 and W9-3). This is the factory setting.
2. For 12-bit modules:
   a. If the image source is video or 8- or 9-bit digital, check that the Single/Dual jumper is in the Single position (shorted across W9-2 and W9-3). This is the factory setting.
   b. If the image source is 10-, 11- or 12-bit digital, set the Single/Dual jumper to the Dual position (shorted across W9-1 and W9-2).

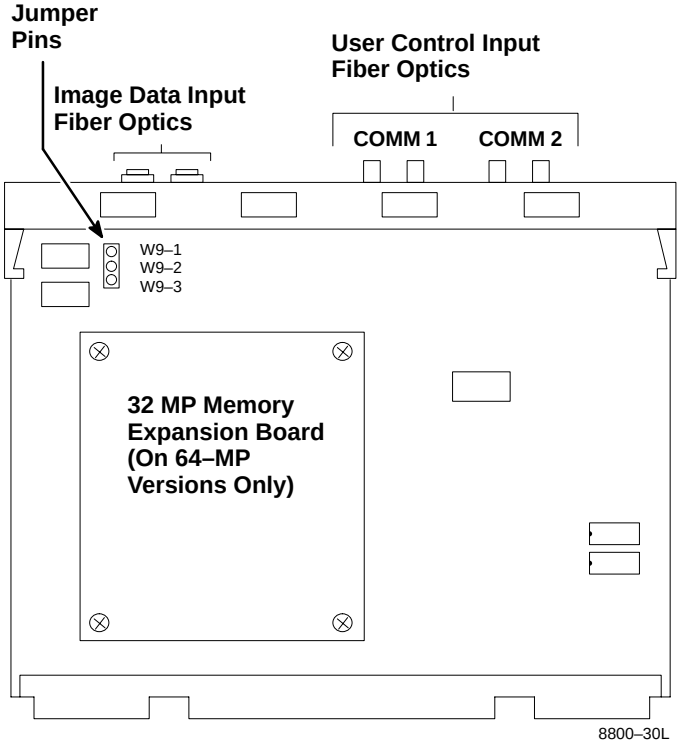


Figure 2-12. New Input Module

2-2-6. IMS Backplane

VME Bus Request/Grant

Each board slot, with the exception of Slot 0 (farthest to the left) and the system controller slot (farthest to the right), has a set of 5 jumpers to enable/disable the VME Bus Request/Grant signals. The jumpers are located to the right of each slot near the bottom of the VME connector.

Note

The first output module must always be installed in the slot farthest to the left and the system controller must always be installed in the slot farthest to the right.

The jumpers are factory set and should not need to be changed unless a module is added or removed.

If a board is installed in a slot, the top jumper to the right of the slot must be open (to enable the slot). Install the jumper block on a single jumper pin.

If a slot is empty, the top jumper to the right of the slot must be closed (to disable the slot). Install the jumper block to short across the two jumper pins.

Refer to Figure 2-13 (on page 2-15) for sample jumper settings.

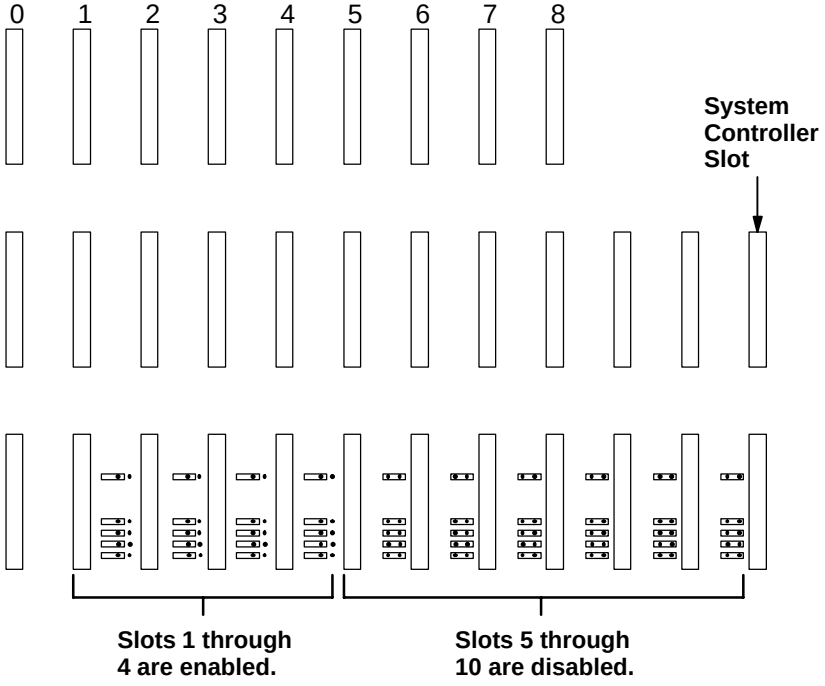

0
1
2
3
4
5
6
7
8
System Controller Slot
Slots 1 through 4 are enabled.
Slots 5 through 10 are disabled.

Figure 2-13.

2-2-7. UKEIB

Caution

The switches in the UKEIB must be set before any cables are connected to it. If the switches are not set correctly when cables are connected, components within the UKEIB may be damaged.

Caution

Use only approved cables and ensure that the cables are connected to the proper connectors on the UKEIB. If unapproved cables are used, or cables are connected incorrectly, components within the UKEIB may be damaged.

Note

Refer to Figure 2-14 (on page 2-17) for switch locations.

Signal Path

SW1 determines which signal path is enabled within the UKEIB. The various control sources require different signal paths. Set the switches as indicated in the table on page 2-17.

Host Connector Signals

SW2 determines which signals will be present on Pins 5 and 9 of the HOST connector. For normal operation, set SW2 to the center position. If an OEM fiber optic kit is being installed, set SW2 as directed in the kit instructions.

Signal Path Enabled	SW1 Switch Positions					
	1	2	3	4	5	6
Keypad to Input Module	On	Off	On	On	On	On
RS232 Host to Input Module	Off	On	Off	Off	On	Off
RS422 Host to Input Module	Off	On	Off	On	On	On
RS232 Host to Translator Keypad to Input Module	On	Off	On	Off	Off	On
RS422 Host to Translator Keypad to Input Module	On	Off	On	On	On	On

SW2 Position	HOST Connector (P3) Signals	
	Pin 5	Pin 9
Left	5V	GND
Center	KP-IN	KP-OUT
Right	+12V	–12V

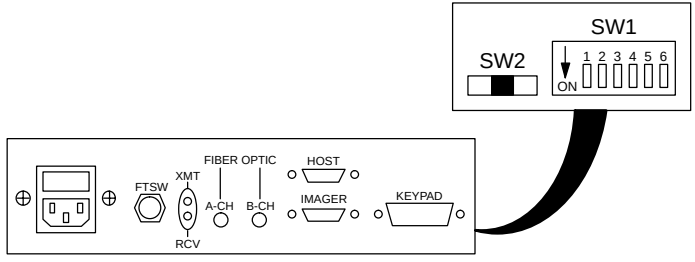


Figure 2-14.

2-2-8. VEIB

Pixel Clock Source

Two jumpers in the VEIB specify the pixel clock source. The clock may be external (provided by the source modality) or internal (generated by a Phase Lock Loop module installed in the VEIB). The jumpers are factory set, and should not need to be changed unless a PLL module is added or removed. Refer to Figure 2-15.

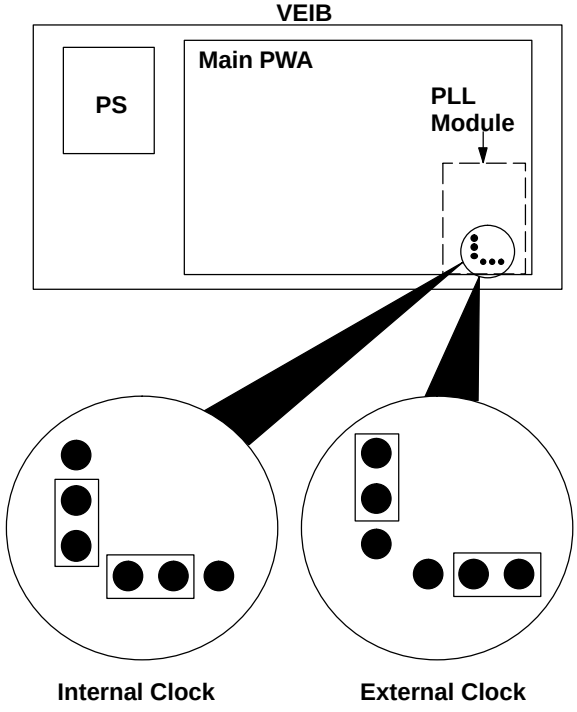


Figure 2-15.

2-2-9. EVEIB

Pixel Clock Source

Jumpers W5 and W6 specify the pixel clock source. The clock may be external (provided by the source modality) or internal (generated by a Phase Lock Loop module installed in the EVEIB). The jumpers are factory set, and should not need to be changed unless a PLL module is added or removed. Refer to Figure 2-16.

Termination

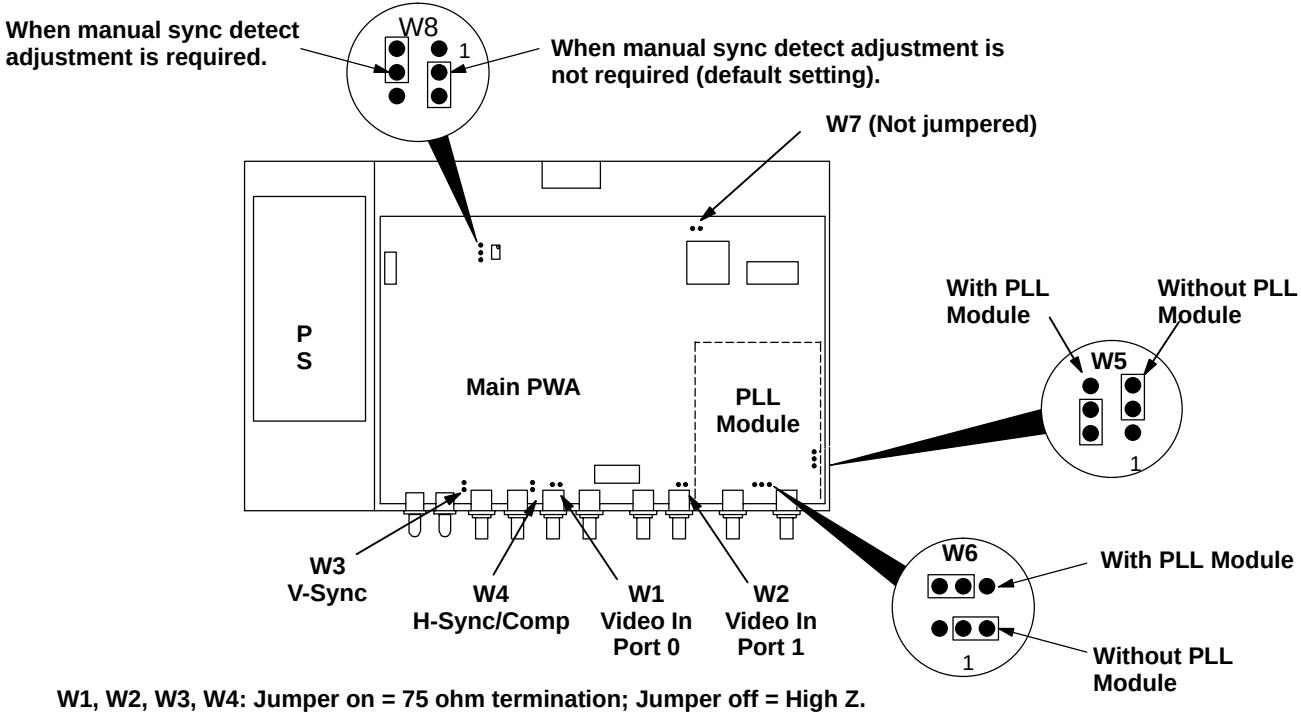
Jumpers W1 through W4 determine whether or not the Video In and Sync ports are terminated at 75 ohms. For each port, if the jumper is installed, termination is provided. This is the default setting. The jumper should only be removed if a T-connector is being used on the port. Refer to Figure 2-16.

Sync Detect Potentiometer

Jumper W8 determines whether or not the manual sync detect potentiometer (R6) is enabled. Refer to Figure 2-16. By default, R6 is disabled. The following paragraphs describe the situation in which R6 might need to be enabled.

The width of the horizontal sync pulse should be approximately 7.5% of the horizontal line time. If it is significantly different (<5% or >10%), the EVEIB may not be able to detect horizontal or vertical sync. Two modalities known to have this problem are the ADAC 4100 and the Toshiba X-Vision.

Before enabling R6 and performing a manual sync detect adjustment, be sure to try each of the 16 combinations of settings for Vertical Sync Detect and Black Level Window available in the Advanced Video Parameters screen in MPC for Windows. Refer to the MPC help screens for details. If a manual sync detect adjustment is required, refer to the EVEIB Installation Instructions.



W1, W2, W3, W4: Jumper on = 75 ohm termination; Jumper off = High Z.

Figure 2-16.

2-2-10. DEIB

Transfer Clock Speed

Two jumpers in the DEIB specify either single (10 MHz) or dual (12.5 MHz) transfer clock speed.

Single transfer means that one byte of data must be transferred for each pixel; this is used when the input pixel width is 8 or 9 bits per pixel. This is the factory default setting.

Dual transfer means that two bytes of data must be transferred for each pixel; this is required when the input pixel width is 10, 11, or 12 bits per pixel.

Determine the pixel width used by the digital image source (refer to the OEM specifications, contact the OEM site engineer, or contact the National Service Center), then set the jumpers as indicated in Figure 2-17.

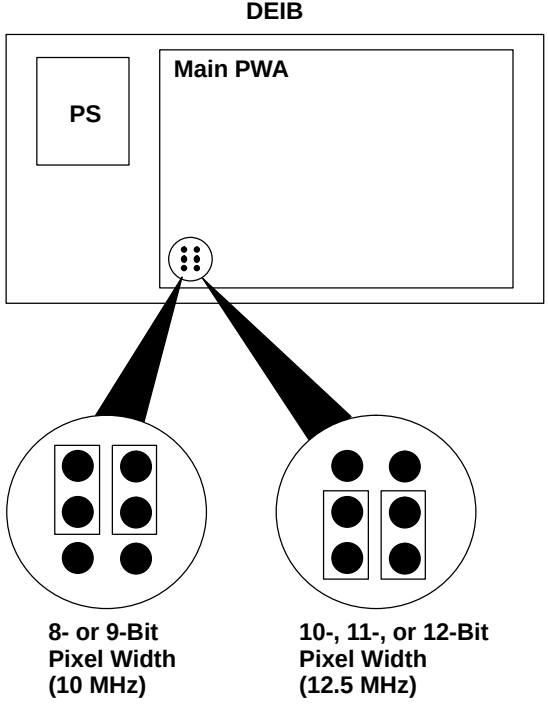


Figure 2-17.

2-3. Cable Connections

When connecting cables to the 8800, as described in the following paragraphs, route cables through the access slot. Leave enough slack to reach the appropriate input module or output module at the front of the IMS card cage. Refer to Figure 2-18.

Secure the bundle of cables with hook and loop fastener on top of the card cage.

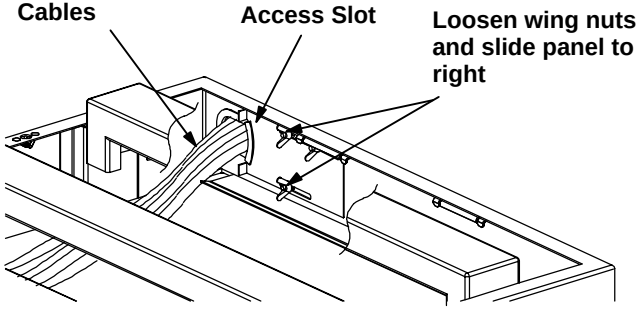


Figure 2-18.

After you have connected all cables to the 8800, slide the panel back to the left and tighten the wing nuts.

2-3-1. Keypad to KFEIB to 8800

Note

The KFEIB (Keypad/Fiber External Interface Box) only supports keypad control users. A UKEIB is required for host control users.

1. Connect the keypad cable to the KFEIB. Refer to Figure 2-19.

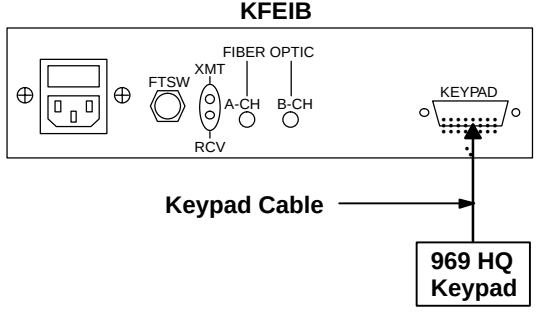


Figure 2-19.

Caution

Do not disconnect the keypad cable to power cycle the Keypad. Instead unplug the KFEIB power cord or UKEIB power cord (if a UKEIB is used in place of a KFEIB).

2. If an optional footswitch is to be used, connect it to the KFEIB. Refer to Figure 2-20.

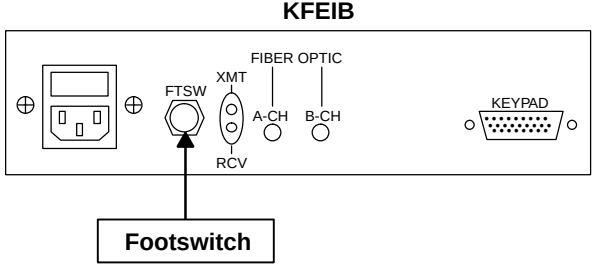


Figure 2-20.

3. Connect the fiber optic cable to the KFEIB. Refer to Figure 2-21.

4. At the 8800, install a fiber optic converter (if required) on the Comm 0 port of the appropriate input module. Set the switch on the converter toward the fiber optic connectors.

5. Route the cable from the KFEIB through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.

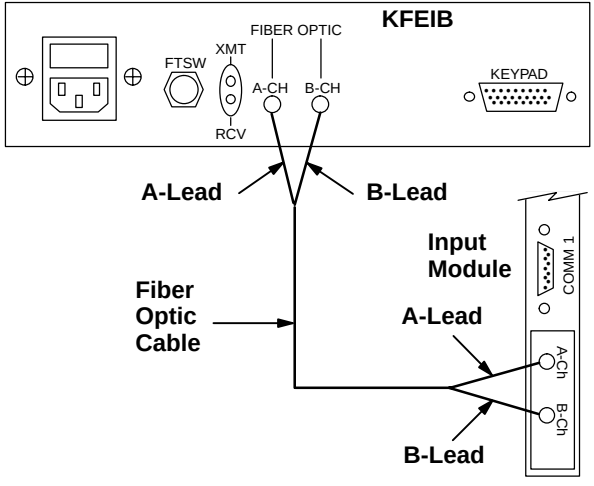


Figure 2-21.

6. Connect the cable to the fiber optic converter installed in Step 4. Refer to Figure 2-21. Secure the cable using the hook and loop material on top of the card cage.
7. Connect the KFEIB power cord. For installations outside the U.S. and Canada, the KFEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The KFEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).
8. If two consoles are using this input module, repeat Steps 1 through 7, but connect to the Comm 1 port of the input module.

2-3-2. Host Control to UKEIB to 8800

Caution

The switches in the UKEIB must be set before any cables are connected to it. Use only approved cables and ensure that the cables are connected to the proper connectors on the UKEIB. If the switches are not set correctly when cables are connected, or unapproved cables are used, or cables are connected incorrectly, components within the UKEIB may be damaged.

Note

Refer to subsection 5-2 for pinouts of the various host adapter cables.

Note

A translator keypad is required for hosts programmed with OEM commands. The translator keypad translates the OEM commands to Imation commands that can be interpreted by the 8800. Different translator keypads are required for different OEMs.

1. Set the switches in the UKEIB (Universal Keypad External Interface Box) as required. Refer to Procedure 2-2-7.
2. Connect the host adapter cable to the UKEIB. Refer to Figure 2-22.

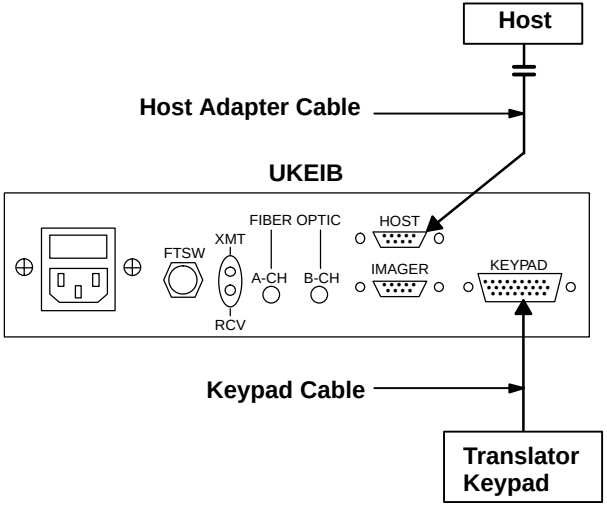


Figure 2-22.

3. If a translator keypad is required, connect the keypad cable to the UKEIB. Refer to Figure 2-22.
4. If an optional footswitch is to be used, connect it to the UKEIB. Refer to Figure 2-23.

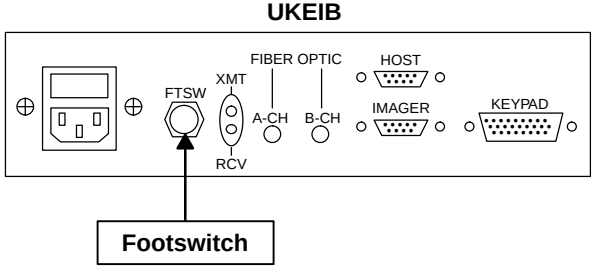


Figure 2-23.

5. Connect the fiber optic cable to the UKEIB. Refer to Figure 2-24.

Note

For agency reasons, only fiber optic cables are to be used when connecting the UKEIB to the 8800. Do not connect a copper cable to the IMAGER connector on the UKEIB.

6. At the 8800, install a fiber optic converter (if required) on the Comm 0 port of the appropriate input module. Check the switch on the converter to ensure that it is set toward the fiber optic connectors.
7. Route the cable from the UKEIB through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
8. Connect the cable to the fiber optic converter installed in Step 6. Refer to Figure 2-24. Secure the cable using the hook and loop material on top of the card cage.
9. Connect the UKEIB power cord. For installations outside the U.S. and Canada, the UKEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The UKEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).
10. If two consoles are using this input module, repeat Steps 1 through 9, but connect to the Comm 1 port of the input module.

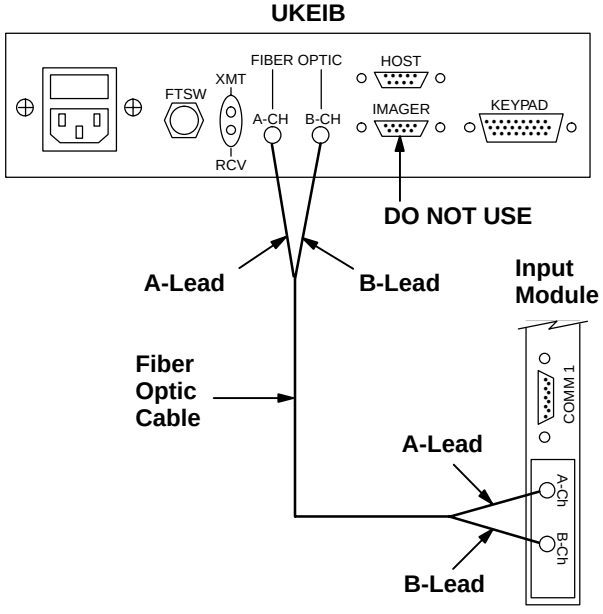

UKEIB
FIBER OPTIC
HOST
XMT
FTSW
A-CH
B-CH
IMAGER
KEYPAD
RCV
DO NOT USE
A-Lead
B-Lead
Input Module
Fiber Optic Cable
COMM 1
A-Lead
A-Ch
B-Ch
B-Lead

Figure 2-24.

2-3-3. Video Source to VEIB to 8800

1. Select the proper type of VEIB (Video External Interface Box) for the modality. The type required depends on the pixel clock source:
   - If the source modality does not provide a pixel clock signal, a VEIB with a PLL (Phase Lock Loop) module is required. The PLL module generates an internal pixel clock signal.
   - If the source modality provides a pixel clock signal, a standard VEIB (without a PLL module) is required.
2. Check/set the jumpers in the VEIB. Refer to Procedure 2-2-8.
3. Use an analog cable to connect the video signal from the modality to the Port 0, Video In connector on the VEIB. Refer to Figure 2-25.
4. If an external pixel clock is provided, use an analog cable to connect it to the Ext Clock In, Port 0 connector on the VEIB. Refer to Figure 2-25.
5. If two consoles are to be connected for this modality, repeat the video and pixel clock connections using the Port 1 inputs on the VEIB.

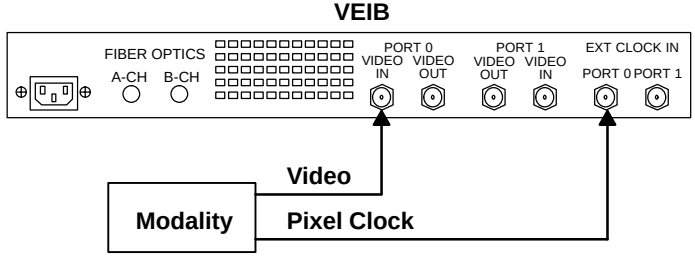


Figure 2-25.

Note

Both modality inputs require either external clocks or PLL internal clocks be used. The VEIB does not support one input running with an external clock and the other with a PLL internal clock.

6. Connect the fiber optic image cable to the VEIB. Refer to Figure 2-26.
7. At the 8800, route the cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
8. Connect the cable to the fiber optic connectors on the appropriate input module. Refer to Figure 2-26. Secure the cable using the hook and loop material on top of the card cage.
9. Connect the VEIB power cord. For installations outside the U.S. and Canada, the VEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The VEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

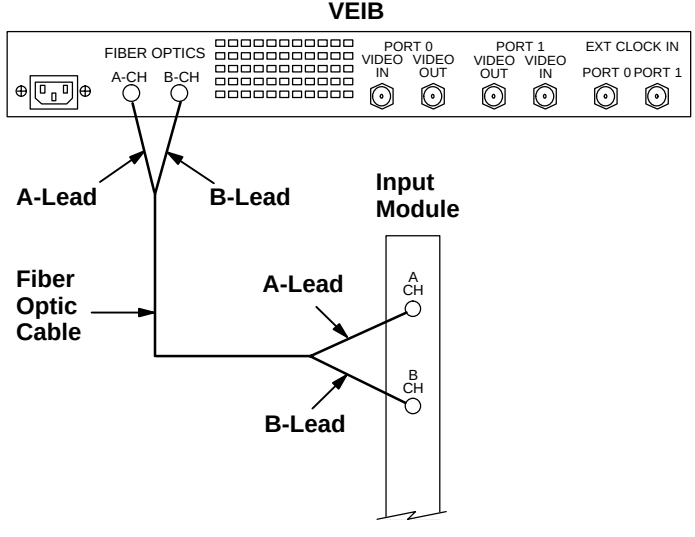


Figure 2-26.

2-3-4. Video Source to EVEIB to 8800

1. Check/set the jumpers in the EVEIB. Refer to Procedure 2-2-9.
2. If the modality provides a pixel clock signal, use an analog cable to connect it to the appropriate Ext Clock In connector on the EVEIB. Refer to Figure 2-27.

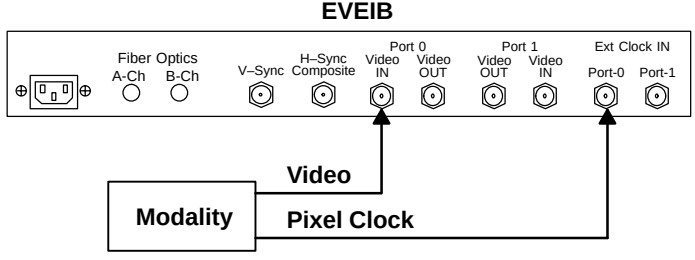


Figure 2-27.

Note

Port 0 is the only port that supports separate Sync inputs. Port 1 only supports standard composite video.

3. The video connections vary depending on the type of video output by the modality:
   - If the modality provides standard composite video, use an analog cable to connect the video signal from the modality to the appropriate Video In connector on the EVEIB. Refer to Figure 2-27.
   - If the modality provides SVGA output (like the PowerPC), an adaptor cable is required. Refer to Figure 2-28. Connect the green BNC cable to the Video In Port 0 connector on the EVEIB. Connect the black BNC cable to the H-Sync/Composite connector. If the modality provides a separate vertical sync signal, connect the yellow BNC cable to the V-Sync connector. The two 15-pin connectors on the adapter cable connect to the PC (longer cable) and the monitor cable.

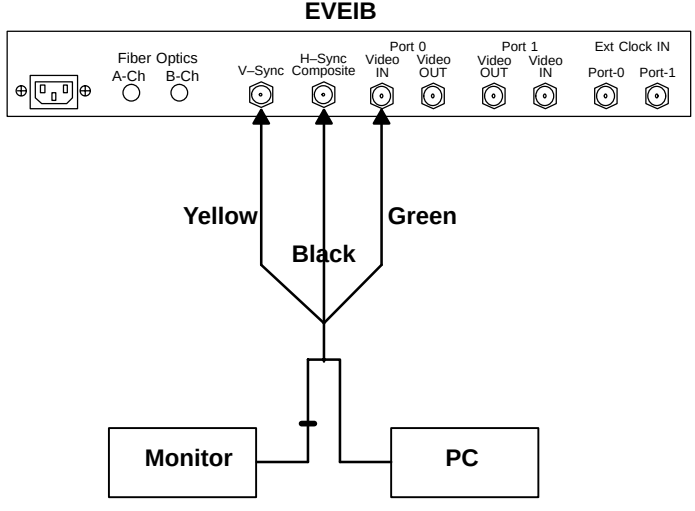


Figure 2-28.

4. Connect the fiber optic image cable to the EVEIB. Refer to Figure 2-29.

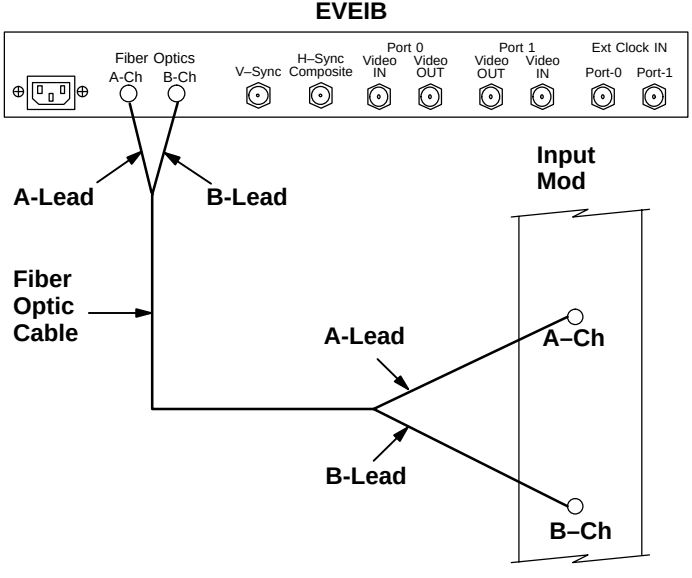


Figure 2-29.

5. At the 8800, route the cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
6. Connect the cable to the fiber optic connectors on the appropriate input module. Refer to Figure 2-29. Secure the cable using the hook and loop material on top of the card cage.
7. Connect the EVEIB power cord. For installations outside the U.S. and Canada, the EVEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The EVEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

2-3-5. Digital Source to DEIB to 8800

1. Check/set the jumpers in the DEIB. Refer to Procedure 2-2-10.
2. Use a digital cable to connect the modality to the Port 0, Digital In connector on the DEIB. Refer to Figure 2-30.

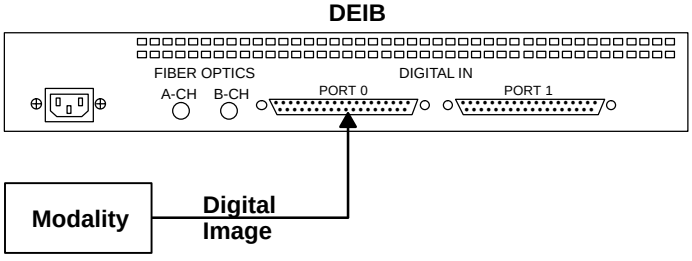


Figure 2-30.

3. If two consoles are to be connected for this modality, connect the second digital cable to the Port 1 input on the DEIB.
4. Connect the fiber optic image cable to the DEIB. Refer to Figure 2-31.

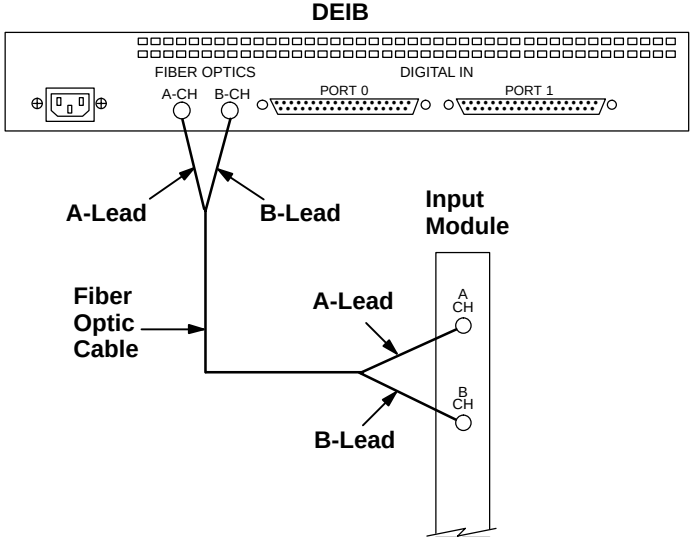


Figure 2-31.

5. At the 8800, route the cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
6. Connect the cable to the fiber optic connectors on the appropriate input module. Refer to Figure 2-31. Secure the cable using the hook and loop material on top of the card cage.
7. Connect the DEIB power cord. For installations outside the U.S. and Canada, the DEIB is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The DEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).

2-3-6. 8800 to Dual Printer Connects

The 8800 can connect with one or two 969 HQ Dual Printers, one or two 8700/8500 Dual Printers, one or two 8300 Laser Imagers or any two of these printers. Before you can connect the 8800 to the printers, an output module, local fiber interface, and related components must be installed in the 8800 for each printer. If the 8800 and printer(s) are ordered together, these components are factory installed. If the dual printer(s) or 8300 imager(s) are ordered separately, an output module, local fiber interface and related components are supplied with each printer and must be field-installed in the 8800. Installation instructions for the components that mount in the 8800 are included with the dual printer or 8300.

2-3-6-1. 8800 to 969 HQ Dual Printer

1. At the 8800, route the fiber optic cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
2. Connect the cable to the appropriate fiber optic connectors on the local fiber interface. Refer to Figure 2-32. Secure the cable using the hook and loop material on top of the card cage.
3. At the 969 HQ Dual Printer, route the fiber optic cable through the slot at the rear of the imager. Pull the cable to the front of the imager.
4. Connect the cable to the fiber optic connectors on the DPEIB. Refer to Figure 2-32.

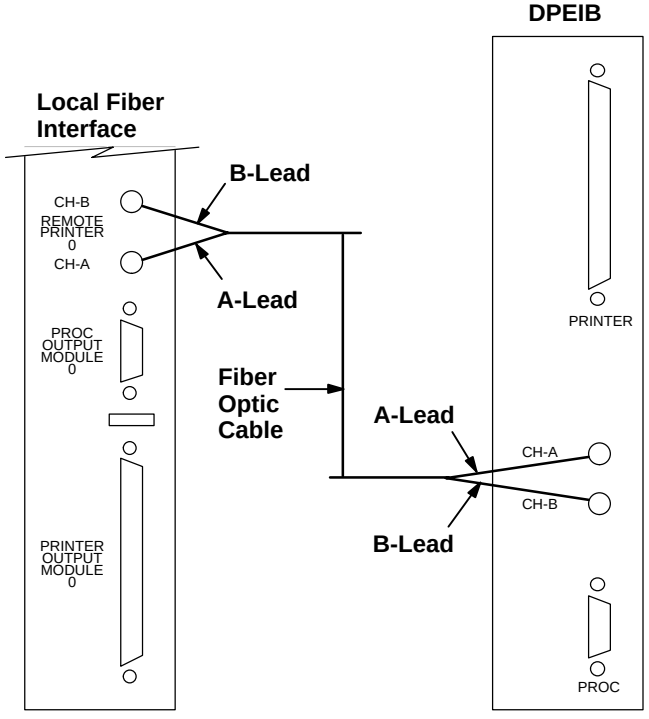


Figure 2-32.

2-3-6-2. 8800 to 8700/8500 Dual Printer

1. At the 8800, route the fiber optic cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
2. Connect the cable to the appropriate fiber optic connectors on the local fiber interface. Refer to Figure 2-33. Secure the cable using the hook and loop material on top of the card cage.
3. Connect the fiber optic cable to the DPRI at the rear of the 8700/8500 Dual Printer. Refer to Figure 2-33.

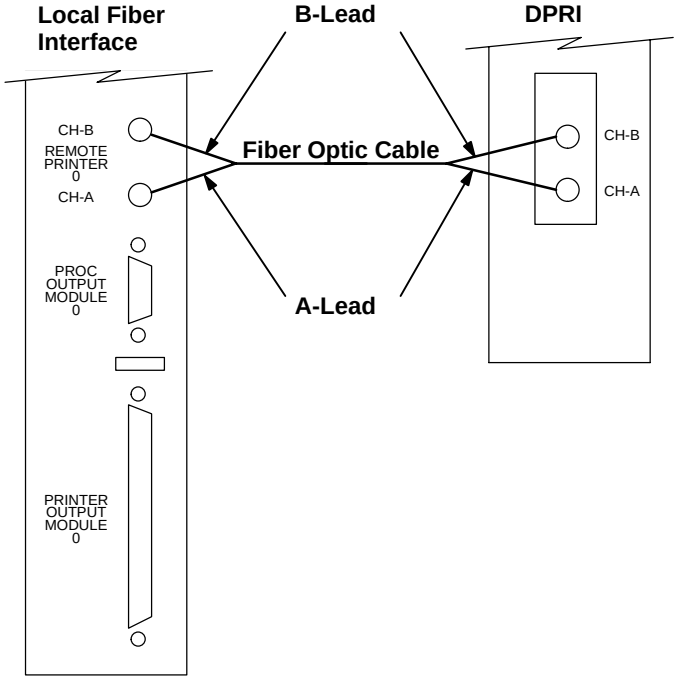

Local Fiber Interface
B-Lead
DPRI
CH-B
REMOTE PRINTER 0
CH-A
Fiber Optic Cable
CH-B
CH-A
PROC OUTPUT MODULE 0
A-Lead
PRINTER OUTPUT MODULE 0

Figure 2-33.

2-3-6-3. 8800 to POEIB to 8300

1. At the 8800, route the fiber optic cable through the slot at the rear of the cabinet. Pull the cable across the top of the card cage.
2. Connect the cables to the appropriate fiber optic connectors on the local fiber interface. Refer to Figure 2-34. Secure the cable using the hook and loop material on top of the card cage.
3. Connect the other end of the fiber optic cable to the fiber optic connectors on the POEIB*. Refer to Figure 2-34.
4. On the 8300 Digital Input Board, connect the 3-meter POEIB Image Cable* to the 37-pin connector. Refer to Figure 2-35.
5. Connect other end of 3-meter POEIB Image Cable to the 37-pin connector on the POEIB.
6. On the 8300 Digital Input Board, connect the 3-meter KEIB cable* to the 9-pin connector. Refer to Figure 2-35.
7. Connect the other end of the 3-meter KEIB cable to the 9-pin connector on the POEIB.
8. Connect the POEIB power cord.* For installations outside the U.S. and Canada, the POEIB is supplied with a harmonized power cord that has no wall plug. For these locations, attach the proper type plug (obtain locally). The POEIB uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).
9. Connect the 9-pin interconnect cable* from the local fiber interface to one of the output modules as shown in Figure 2-36 (on page 2-40).
   a. If the POEIB/8300 is connected as the first printer on the 8800, connect the interconnect cable as shown in Figure 2-36-a.
   b. If the POEIB/8300 is connected as the second printer on the 8800, connect the interconnect cable (shown in Figure 2-36-b).

* The 5 items on this page marked with asterisks are provided in a POEIB Interface Kit that is supplied in a 8300-to-8800 Interface Sales Package.

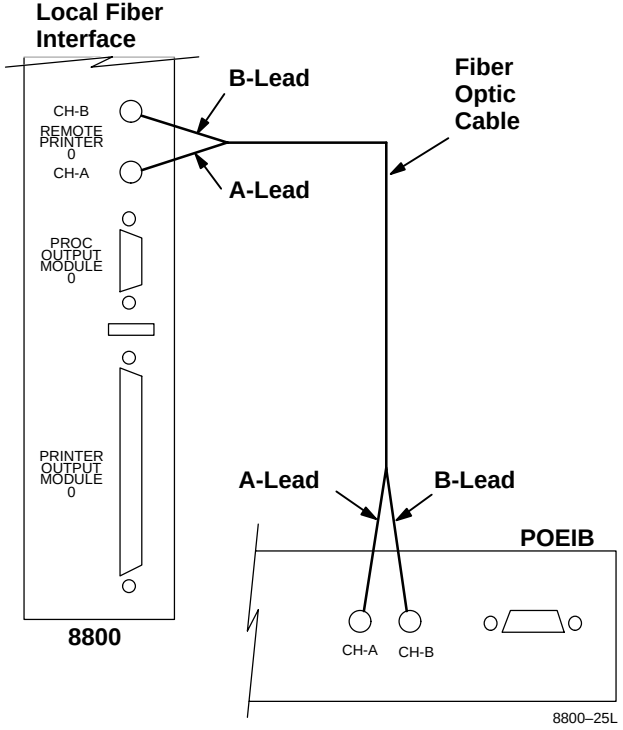


Figure 2-34.

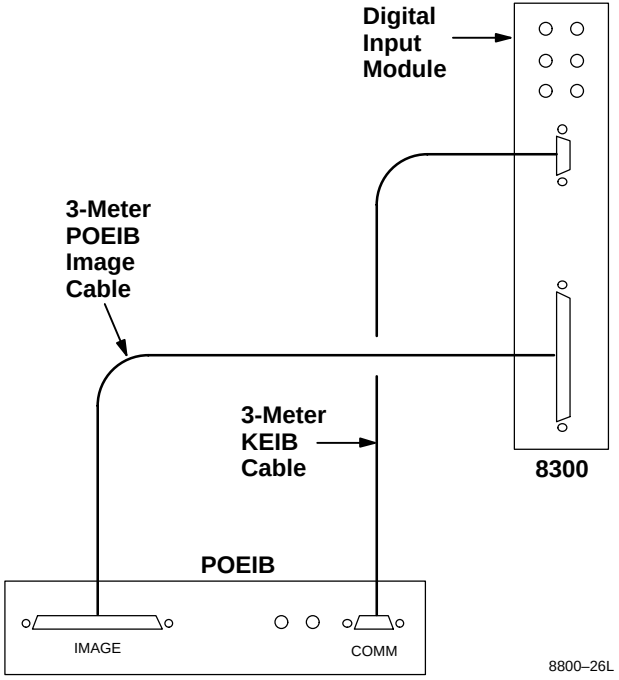


Figure 2-35.

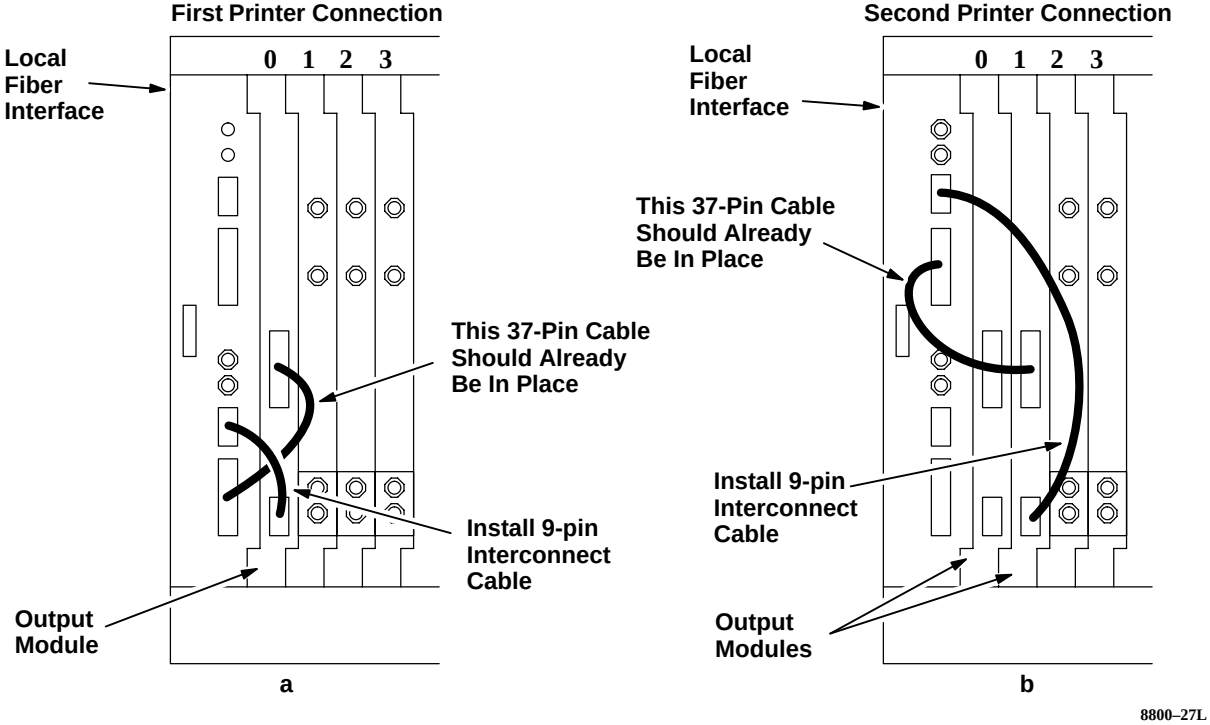

First Printer Connection
Local Fiber Interface
0 1 2 3
This 37-Pin Cable Should Already Be In Place
Install 9-pin Interconnect Cable
Output Module
a
Second Printer Connection
Local Fiber Interface
0 1 2 3
This 37-Pin Cable Should Already Be In Place
Install 9-pin Interconnect Cable
Output Modules
b
8800–27L

Figure 2-36.

2-4. System Configuration

After all cables have been connected, and all switch and jumper settings have been verified, perform the following configuration procedures.

Note

If the 8800 is installed in the UK, Austria, Belgium, Denmark, Finland, Norway, or Sweden, the MOV PWA must be removed from the circuit according to the procedures described in 2-1-1.

2-4-1. Power Up the POEIB and 8300

If you have connected a POEIB/8300 to the 8800, power up the POEIB and 8300.

2-4-2. Power Up the 8800

1. Connect the 8800 power cord. For installations outside the U.S. and Canada, the 8800 is supplied with a harmonized power cord with no wall plug. For these locations, attach the proper type plug (obtain locally). The 8800 uses a universal power supply that requires no modification for input voltages in the range of 100 to 240 VAC (50/60 Hz).
2. Turn on the 8800.

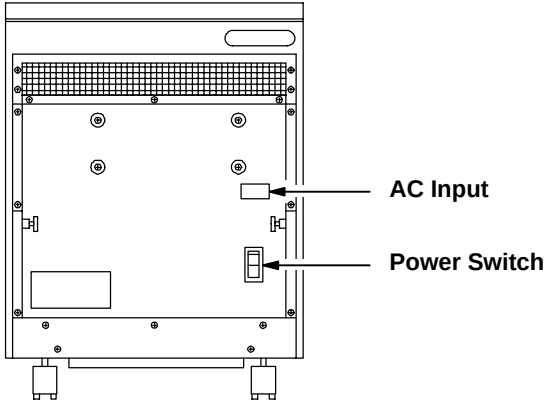


Figure 2-37.

2-4-3. Connect the MPC to the 8800

1. Connect a straight-through serial cable (9-pin female to 9-pin male) between the serial port of the MPC and the MPC connector on the right front panel of the card cage (Figure 2-38).
2. On U.S. supplied modem interface boards, set the toggle switch to the MPC OPERATION (upper) position. On O.U.S. interface boards there are no RJ11 jacks. There are just two connectors, one for the MPC and the other for the local panel.

Note

When the toggle switch is set to the MPC OPERATION position, the local panel is disabled. When finished using the MPC, be sure to set the toggle switch back to the LOCAL KEYPAD (NORMAL) position.

3. Turn on the MPC, and start the MPC for Windows program.

Note

If a “Subsystem Not Communicating” message is displayed, select Preferences from the Operations menu, then check the Direct Connect Baud and Com settings.

Note

The MPC for Windows program is used to load configuration parameters into NVRAM within the various system components. Context sensitive help is available throughout the program via the F1 key. For example, for a description of a particular parameter, move the highlight to that parameter, then press F1. The MPC for Windows Help file will open and display the topic associated with the highlighted parameter.

2-4-4. Set the System Clock

1. Select Clock from the Utilities menu.
2. Enter the date and time in the Clock window, then select the OK button.

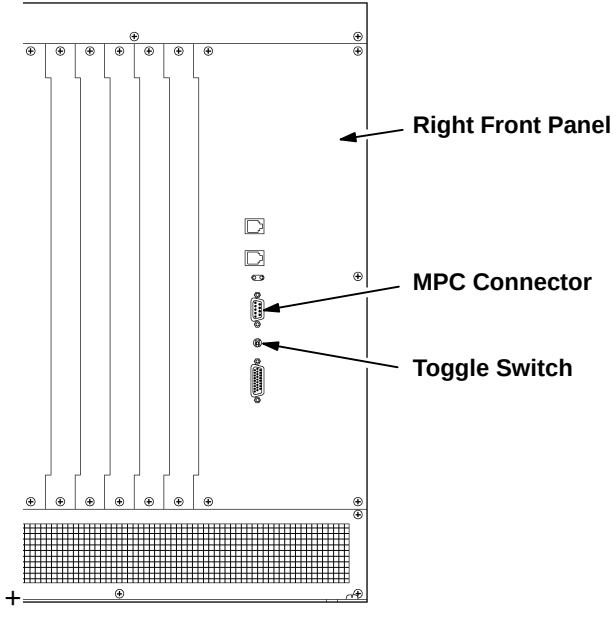


Figure 2-38.

2-4-5. 8800/8300 Setup

If you are setting up the 8800 to drive a POEIB/8300, see the **8300 Service Manual** for setup procedures. Refer to the procedure titled *8300/8800 or 969 Setup Procedures*, located in section 2 of the 8300 Service Manual.

If you are setting up the 8800 for any printer other than the 8300, go on to the setup procedures on the following pages.

2-4-6. Load IMS Parameters

1. Select the IMS subsystem.
2. Select Output 0 Comm 0 from the component select dropdown list box (to the right of the subsystem buttons).
3. Select the Config window display button.
4. Select the desired printer (969, 8700, 8500 or 8300), then select the Save button.
5. Select the Comm window display button.
6. Select the Printer button, then select the Save button.

   If you selected the 8300 printer, in Step 4 above, the MPC will display a message reminding you to change the 8300 comm parameters to match the comm parameters displayed in the MPC Comm window. You must do this on the 8300 Local Panel. Refer to the 8300 Service Manual, for 8300 setup instructions. See the procedure titled *8800/8300 Setup Procedures*, in Section 2.
7. Select Output 0 Comm 1 from the component select dropdown list box.
8. Select the Comm window display button.
9. Select the Printer button, then select the Save button.
10. If the 8800 contains a second output module, repeat Steps 2 through 9, substituting Output 1 for Output 0.
11. Select the first user from the component select dropdown list box.

Note

Users are identified by slot/comm (e.g., Input 1 Comm 0) or modality name, depending on the User Display setting in the Preferences window.

12. If a script file is available for this user, select the Script window display button. Specify the script file name and location in the Select Script File window, then select the OK button. If a script file is not available, or the script file settings need to be modified, proceed to the next step.

13. Select the Comm window display button. Select the appropriate Keypad Defaults button, modify the parameter settings as needed for host control users, then select the Save button.
14. Select the Image window display button. Modify the parameter settings as needed, then select the Save button.
15. Select the Host window display button. Modify the parameter settings as needed, then select the Save button.
16. Select the System window display button. Modify the parameter settings as needed, then select the Save button.
17. Repeat Steps 11 through 16 for each user listed in the component select dropdown list box.
18. After all the IMS parameters have been loaded, power cycle the 8800.

2-4-7. Load MCS Parameters

(Does not apply for 8300 connect.)

1. Select the MCS subsystem.
2. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.
3. If the system includes two Dual Printers, select the second printer from the component select dropdown list box, then repeat Step 2.

2-4-8. Load Processor Parameters

(Does not apply for 8300 connect.)

1. Select the Processor (PROC) subsystem.
2. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.
3. Select the Media window display button. Modify the parameter settings as needed, then select the Save button.
4. If the system includes two Dual Printers, select the second processor from the component select dropdown list box, then repeat Steps 2 and 3.

2-4-9. Load AIQC Parameters

(Does not apply for 8300 connect.)

1. Select the AIQC subsystem.
2. Select the Config window display button. Select the Display Defaults button. Modify the parameter settings as needed, then select the Save button.
3. If the system includes two Dual Printers, select the second output from the component select dropdown list box, then repeat Step 2.

2-4-10. Load Keypad Parameters

1. Select the Keypad (KPD) subsystem.
2. Select the first keypad from the component select dropdown list box.
3. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.
4. If custom formats are to be loaded for this keypad, select the Load window display button. Select the format (the letter designations correspond to the labels displayed on the keypad's custom format buttons). Specify the custom format file name and location in the Load Keypad Custom Format window, then select the OK button.
5. Repeat Steps 2 through 4 for each keypad listed in the component select dropdown list box.

2-4-11. Digital Modality Setup

Note

Load digital parameters from a script file whenever possible (refer to Step 12 of Procedure 2-4-6). If a script file is not available for the modality, enter parameters manually. To determine the correct settings, refer to the OEM specifications, contact the OEM site engineer, or contact the National Service Center.

1. Select the EIB subsystem.
2. Select the first DEIB user from the component select dropdown list box.
3. Select the Config window display button. Modify the parameter settings as needed, then select the Save button.

Note

When the Save button is selected, the digital parameters are loaded into the DEIB. If the save operation fails, check the fiber optic cables (A to A, B to B – use a flashlight), the DEIB power supply, and input module communications (use MPC for WIndows diagnostics). Power cycle the DEIB, then try saving again.

4. Verify that the modality is generating an image.
5. Select the Acquire button.

Note

If the acquire fails, recheck the digital parameter settings. Modify the settings as needed. Save the new settings, then try to acquire again.

6. Select the Print button. Verify that the image is printed successfully.

2-4-12. Video Modality Setup

2-4-12-1. Inspect Signals from Modality

1. Verify that the modality is generating an image.
2. Inspect the video and pixel clock signals:
   a. **Check for two video modes.** Check with the OEM to determine if the modality can operate in two different modes that require different video parameters. Some OEMs have one set of video parameters for Live (Scan) mode and another set for Review (Off Tape) mode. Set up for one or the other.
   b. **Check for double termination.** Observe the host monitor while connecting the video cable to a powered up VEIB/EVEIB. If the monitor image improves or stays the same, there is no problem. If the monitor image suddenly goes bad (ghosting, blurring, faint, etc.), the video signal may already be terminated once, and connecting the VEIB/EVEIB causes a double termination problem. If so, resolve this problem before proceeding.
   c. **Check the pixel clock signal.** Connect the pixel clock cable to the oscilloscope (do not terminate the scope). The pixel clock signal must be above 0.5 volts peak to peak and must be stable. (A pixel clock filter may help eliminate glitches in the pixel clock, but it may also make it worse!) If the signal is okay, connect the pixel clock cable to the VEIB/EVEIB.
   d. **Avoid ground loops.** To prevent a possible ground loop, connect the VEIB/EVEIB power cord to the same power source as the OEM modality. If this cannot be done, and image noise problems are experienced later during image fine tuning, check for a ground loop problem as follows: Temporarily disconnect the ground wire from the VEIB/EVEIB. Run a ground wire from the VEIB/EVEIB to the OEM ground. If the noise goes away, there is a ground loop problem.

2-4-12-2. Enter Rough Video Parameters

Note

Load video parameters from a script file whenever possible (refer to Step 12 of Procedure 2-4-6). If a script file is not available for the modality, enter parameters manually. This requires that an oscilloscope be used to measure some parameters; other parameters are calculated based on these measurements. Refer to the video parameter help screens in MPC for Windows.

1. Select the EIB subsystem.
2. Select the first VEIB/EVEIB user from the component select dropdown list box.

Note

If an EVEIB is being used, verify that the Video Input parameter setting (in the Video Parameters window) is correct. Also verify that the Passes parameter setting is correct. (The EVEIB digitizes incoming video slightly slower than the VEIB. The VEIB would sometimes work with the number of passes set lower than the recommended setting, but the EVEIB will not acquire if the setting is incorrect.)

3. Select the Config window display button. Enter rough parameter settings, then select the Save button.

Note

When the Save button is selected, the video parameters are loaded into the VEIB/EVEIB. If the save operation fails, check the fiber optic cables (A to A, B to B – use a flashlight), the VEIB/EVEIB power supply, and input module communications (use MPC for WIndows diagnostics). Also, in the MPC IMS/System screen, make sure the proper EIB (VEIB or EVEIB) is selected.

4. Select the Acquire button.
   - If successful, proceed to Step 12.
   - If not successful, proceed to Step 5.
5. Temporarily set framing parameters to crop the image to a 100 line by 100 pixel square. (This is done to ensure that a vertical or horizontal sync pulse is not sampled; the parameters will be set for a full frame in Step 12.)
   - Set Image Lines to 100 and Horiz Active Pixels to 100.
   - Set Horizontal Delay and Vertical Delay to select this 100 x 100 square from the center of the image.
6. Connect the host video cable to the oscilloscope (use a T connector with a 75 ohm terminator attached). Measure the video signal from sync tip to maximum white level. If less than 1 volt, set the Double Gain parameter to 0.5 to 1.0. If more than 1 volt, set the Double Gain parameter to 1.0 to 2.0 volts.

7. Set the following parameters to midpoints as indicated:
   - Clock Delay to 6.
   - Fine Pixel Delay to 180.
   - Black Level to 100.
8. Select the Save button.
9. Verify that the Enable LED is on. This indicates that the parameter set has been loaded and the VEIB/EVEIB is in a ready state. Refer to Figure 2-39 (VEIB), or Figure 2-40 (EVEIB).

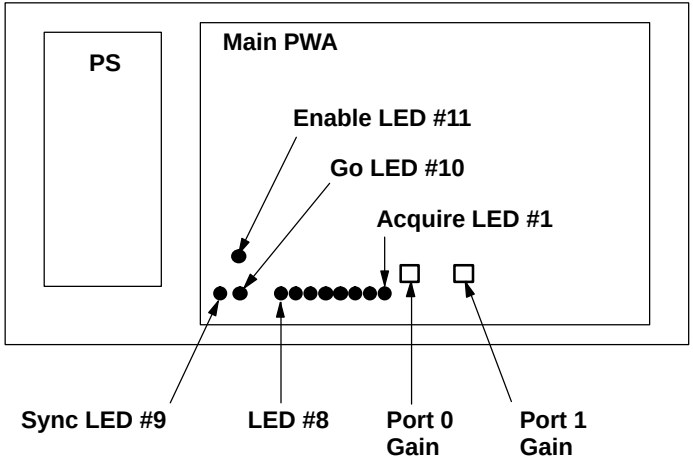


Figure 2-39.

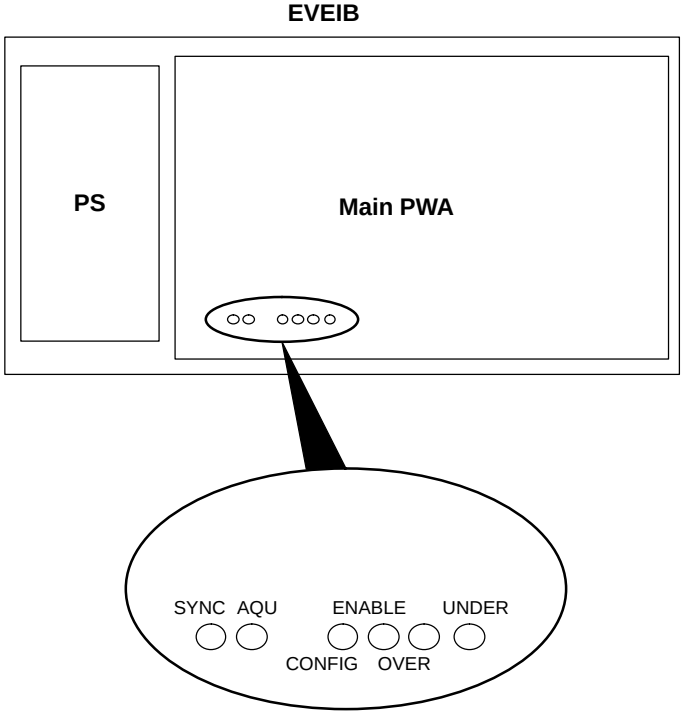


Figure 2-40.

Note

The following Step refers to the gain pot in the VEIB. The EVEIB has no gain pots; it adjusts the gain automatically. With this exception, the following Step applies to the VEIB and the EVEIB.

10. Adjust the gain pot until the Sync LED turns on, then continue turning the pot in the same direction for at least three full turns. Refer to Figure 2-39. **The Sync LED must stay on without flickering or acquires will fail!** There must be at least three full turns of the pot during which the Sync LED remains on steadily. If not, check the video amplitude. The Double Gain parameter may need to be changed to the other setting.

    When the Sync LED is on, it indicates that the VEIB sees the video signal, and is successfully detecting horizontal and vertical sync pulses. The pixel clock has no effect on the state of the Sync LED.

If the Sync LED does not turn on when the gain pot is turned (and the Enable LED **is** on), either no video is present, or the video that is present is completely unrecognizable to the VEIB/EVEIB (the VEIB/EVEIB cannot detect horizontal or vertical sync pulses.) In this case:

- The video cable may be on the wrong port.
- The video signal amplitude may be less than 0.5 volts (this could have several causes: double or triple termination, bad cables, bad video, etc.).
- The video signal amplitude may be okay, but the signal may be bad.
- One or more of the following parameters may be set incorrectly: Double Gain, Black Level, and/or Source.

11. Try acquiring (be sure the Sync, Enable, and Acquire LEDs are all on).
    - If successful, proceed to Step 12.
    - If unsuccessful, try acquiring two or three more times. If still unsuccessful, reset the 8800 and the MPC, and try two or three more times. If still unsuccessful, double check Steps 1 through 10.
12. Adjust the following framing parameters to obtain the full frame (rough draft only; this will be done again during fine tuning):
    - Vertical Delay and Image Lines
    - Horizontal Delay and Horiz Active Pixels
13. Perform video fine tuning.

2-4-12-3. Fine Tune Video Parameters

Note

When printing images from **MPC**, the images are **replicated**. Replicate reproduces the image from the host exactly, without any smoothing. This is done so that any blurring or ghosting will be evident and not disguised by processing the image. When printing images from the **keypad**, the selected **interpolation** value (smooth to sharp) is used to process the image. This may make the image look better, but may also hide other problems. Therefore, it is best to print from MPC when performing fine tuning.

1. Display a SMPTE pattern on the OEM monitor. Be sure the SMPTE image is at OEM defined window and level. If a SMPTE pattern is not available, try using a customer image with all text removed and define the sampling area to include the grey scale. Another alternative is to window and level the customer image so that there are extreme blacks and whites across the whole image.
2. Select the Tune window display button.
3. Select the Gain/Black Level button in the Video Fine Tuning window.
4. An image is acquired, and then the Gain and Black Level Rectangle Selection window opens. Select the Retrieve button to download the acquired image to the MPC.

Note

Each time the Gain and Black Level Rectangle Selection window is opened, an image is acquired and the most recently downloaded (**not** the most recently acquired) image is displayed. This means that the window can be opened multiple times while configuring a modality without having to download an image each time. However, be sure to download an image for each modality, and be aware that the downloaded image may not match the most recently acquired image (for example, if the modality's screen saver kicks in after the image has been downloaded).

5. Examine the downloaded image:
   a. Identify an area that includes maximum blacks, but does not include any border (video blanking) area. **This is critical.** (The only area on a SMPTE pattern that contains maximum black is the 100% square; the other black bars are not maximum black.)
   b. Identify an area that includes maximum whites, but does not include any overwhite text. **This is critical.**
6. Click and drag to create a rectangle that surrounds the true black and true white areas identified in the previous step, then select the OK button.

Note

At this point, the IMS samples the video and passes the digital values to the MPC. The MPC adjusts the black level based on the sample and turns on the appropriate LED in the VEIB to indicate the gain (white level). This sampling and adjusting continues at approximately 4 second intervals.

7. The Gain and Black Level Fine Tune window opens, and displays the minimum and maximum digital values and the black level (EVEIB only).

Note

If all the values are zero, the acquire has failed, and the cause should be investigated.

Note

The following Step does not apply to the EVEIB.

8. At the VEIB, adjust the appropriate gain pot until LED 6 or LED 7 turns on. Remember that the state of the LEDs is updated at approximately 4 second intervals.
9. At the MPC, select the OK button in the Gain & Black Level Fine Tune window.

Note

Because this is a rough gain and black level adjustment, the digital values displayed at this point are not important. They will become important when the final adjustment is performed later in this procedure.

10. Select the Bad Clock Delay button in the Video Fine Tuning window. Select the OK button when the Successful Acquire and Successful Print messages are displayed.
11. The image is acquired using each of 16 different coarse clock delay settings. The 16 images are printed on one or multiple sheets depending on the printer type connected. The coarse delay setting is printed above each image. Identify any images that exhibit vertical line pixel shifting. Ignore any other image problems at this time.
12. In the Bad Clock Delays window, select those images identified in the previous step, then select the OK button.
13. Select the Fine Pixel/Clock Delay button in the Video Fine Tuning window. Select the OK button when the Successful Acquire and Successful Print messages are displayed.
14. The image is acquired and printed using 16 different combinations of fine pixel and clock delays. The 16 images are printed in a 4:1 format on 4 sheets of film. The clock delay and fine pixel delay are printed above each image. Identify the single best image, then proceed to Step 18.

Note

Perform Steps 15 through 17 only if a single best image cannot be identified when the images are printed in a 4:1 format.

15. Select the Print 1-Up button in the Video Fine Tuning window.
16. Select an image to print in the Video Fine Tuning - Print Full Size window (image numbers are printed above each image on the 4:1 prints), then select the OK button. Select the OK button when the Successful Print message is displayed. Examine the image on the film.
17. Repeat Step 16 as needed. When the single best image has been identified, select the Cancel button in the Video Fine Tuning – Print Full Size window.
18. Select the Config window display button. Enter the clock delay and fine pixel delay settings that are printed above the previously identified image. Select the Save button.
19. Repeat Steps 2 through 7.

Note

The following Step does not apply to the EVEIB.

20. At the VEIB, adjust the appropriate gain pot/wait/adjust/wait/etc. until LEDs 7 and 8 toggle. Wait for 3 or more flashes of the Sync LED between each adjustment; this allows the VEIB time to sample and adjust to the new gain level.
21. At the MPC, if the adjustment is correct, the following values will be displayed in the Gain & Black Level Fine Tune window:

- For a VEIB, the maximum value will be below 511, and will be around 508 to 510. The minimum value will toggle between 0 and 4.
- For an EVEIB, the maximum value will be below 1023, and should be 1016 for 8–bit pixels and 1020 for 12–bit pixels. The minimum value will be above 0, and should be 4 for 8–bit pixels and 2 for 12–bit pixels.

22. When the values listed in the previous Step are displayed, select the Auto Adjust – Stop button to stop the continuous sampling of the video. If the values are close, but not right on, select the Auto Adjust – Once button to perform a single sample and adjust cycle (this can be repeated as required).

Note

The sampling circuitry in the VEIB/EVEIB is susceptible to video noise which can affect image Dmin values. To ensure that image Dmin will be acceptable, the following Step will increase the gain slightly to clip the noise from the video signal. This will decrease image Dmin (and Dmax) slightly.

23. To ensure that image Dmin will be acceptable, increase the gain as follows:
    a. At the VEIB, rotate the appropriate gain pot slightly counterclockwise, then select the Manual Adjust – Once button. The intent now is to produce a maximum value of 1023.
    b. For a EVEIB, add one to the displayed Digital Gain value, then select the Manual Adjust – Once button. The intent now is to produce a maximum value of 1023.
    c. Repeat the previous two steps as required to produce a maximum digital value of 511.
24. Increasing the gain decreases Dmax as well as Dmin. To offset the gain increase, increase the displayed Black Level value by one, then select the Manual Adjust – Once button.
25. Select the Close button to accept the displayed values.

26. Acquire and print a SMPTE test pattern using the lowest available contrast setting (usually contrast #1). Check the black and white levels on the film. If the levels are set correctly, the 95% and 5% patches on the film will be equally visible.

    If a SMPTE pattern is not available, use a customer image and check the grey scale steps. Again, using the lowest available contrast setting, inspect the film for visual distinction of the first two and last two steps of the grey scale. (Note: A low contrast setting produces low contrast in the middle of the scale and high contrast at the ends of the scale.) Step 2 should not blend into Step 1, and Step 15 should not blend into Step 16. If the OEM monitor is adjusted properly (refer to Procedure 2-4-14), it's grey scale can be used for comparison purposes.

If the VEIB/EVEIB is set up CORRECTLY:
What is normally seen (using a contrast test with LUT 693C0, 713C0 or 723C0) is that the contrast test #1 Dmax (0% square) is lighter than a dark border and Dmin (100% square) is equal to or slightly darker than a clear border. It is not until later contrast tests that image Dmax and Dmin equal film Dmax and Dmin. This is acceptable, gives good quality images, and results in the 95% and 5% patches on a SMPTE test film being equally visible. If desired, the image Dmax can be forced to match the border Dmax; there are two steps to accomplish this:

a. In the Image Parameters window, set the Match Border parameter to Yes.

b. Increase the Black Level value by one or two digits. This will darken up the image Dmax, and will also darken up the image Dmin slightly. Do not go past the point of just matching image Dmax to border Dmax or the 5% patch will start to disappear.

If the VEIB/EVEIB is set up INCORRECTLY: Using contrast #1, either the 95% or 5% patch will be gone or faint. If not using a customer image, Step 2 of the grey scale will blend with or be only faintly darker than Step 1, or Step 15 will blend with or be only faintly lighter than Step 16. (See Step 27 of this procedure for possible solutions.)

The other possible incorrect setup of the VEIB is that image Dmax is significantly lighter than film Dmax or that image Dmin is significantly darker than film Dmin. Using a contrast test, this can be seen by the fact that image Dmax and Dmin do not match film Dmax and Dmin until the last few contrast levels, or they never reach film Dmax and Dmin. (See Step 27 of this procedure for possible solutions.)

If the VEIB/EVEIB is set up PERFECTLY: All of the following will be true (with Match Border set to Yes):

- Contrast #1 Dmax and Dmin will match the border Dmax and Dmin.
- Increasing the final Black Level setting by one will make the contrast #1 Dmin slightly darker than a clear border.
- Decreasing the final Black Level setting by one will make the contrast #1 Dmax slightly lighter than a dark border.

This would be the perfect situation; however, in most cases, the VEIB/EVEIB does not seek black and white level this accurately.

27. If the black or white level is unacceptable, try any of the following:
    - Assuming that fine tuning has been done, try selecting a different sampling area (use different row and column settings) when performing the MPC gain adjustment.
    - Try a different image (see Step 1 of this procedure).
    - The Black Level setting can be increased by one or two digits to darken up the image Dmax. This will also darken up the image Dmin slightly.
    - If still having problems, contact TAC, a PST member, or the local video expert.
28. Make final adjustments to framing parameters to obtain the full frame. The preceding fine tuning steps may have shifted the horizontal delay so that a pixel is lost on the right or left side of the image. To check for this, print a film (with clear borders) and view the image. If a pixel is missing from the left or right side, add or subtract one pixel from the Horizontal Delay setting.

Note

In order to print a film with clear borders on an 8700/8500 Dual Printer, the Border setting in the Image Parameters window must be set to 4095. **Be sure to change the Border setting back to 0 when fine tuning is complete.**

29. Proceed to Procedure 2-4-13.

2-4-13. Set Customer Preferences

When performing the following procedure, note that the method of setting customer preferences varies depending on the control source.

- For keypad control users, preferences are set at the Imation User Keypad. Refer to the 8800 User Guide for details.
- For 969 command set users, default preference settings are entered in the Image Parameters window of MPC for Windows.
- For 831/952 (959) command set host control users, preferences are set at the Local Panel of the 8800. Refer to the 8800 User Guide (Section 3) for details.

Note

The functions provided by the Local Panel of the 8800 apply only to 831/952 (959) command set host control users.

Note

Preference settings entered at the Local Panel can be overridden by host commands.

1. Have the customer select a typical image that contains the range of contrasts they will be looking for.
2. Acquire the image and print a contrast test.
3. If everything looks too light or too dark, adjust the density setting. If the density setting looks okay, have the customer select a contrast setting.
4. If the customer finds the image unacceptable at any combination of density and contrast levels, it is possible that the OEM monitor may be misadjusted (refer to Procedure 2-4-14).
5. Have the customer select clear or dark borders.
6. Have the customer select smooth or sharp image processing. If neither smooth nor sharp is acceptable to the customer, the interpolation settings may need to be changed. Refer to the MPC for Windows Help file for details on how to change interpolation settings.

2-4-14. OEM Monitor Adjustment

If the customer likes the images there is no need to adjust the OEM monitor even though it may be slightly off. However, if the customer is unable to get an acceptable contrast on the images, it may be necessary to make the following checks and/or adjustments.

Theory

The OEM's video generator board outputs a video signal to the OEM monitor. This same video signal is sent to the VEIB/EVEIB. The window and level controls adjust this video signal, which affects both the image displayed on the OEM monitor and the image printed on the film. If the monitor's brightness and contrast are out of adjustment, the customer will compensate by adjusting the window and level controls until the image looks good on the monitor. The result of this is that the image on the film and the image on the monitor do not match. Therefore, it is important that after the brightness and contrast have been set correctly, the customer does not turn the brightness and contrast knobs. (Over time the monitor will tend to drift, and the brightness and contrast may have to be adjusted by the OEM.)

Check

With the SMPTE pattern at OEM defined window and level values, the 5% patches (both black and white) should be visible, and should have equal contrast to the enveloping 100% and 0% boxes around them. If the 5% patches are not visible, or are not equally visible, the OEM monitor should be adjusted.

- Ask the OEM to adjust the monitor.
- Be there when the OEM adjusts the monitor, and ensure that the ambient lighting is the same as the normal lighting the customer uses when filming.

Adjustment

1. Adjust the white first. Looking at the text, turn the OEM contrast knob until the whites just start to smear. Then back off the contrast just to the threshold of smearing. The 95%/100% patch in the SMPTE should now be visible.
2. Adjust the black. Turn the brightness knob until the image starts to fill in. Continue until the black in the image starts to turn grey. At this point, the 5%/0% patch should be visible. Back off the brightness until there is an equal balance in the visual ratio of 0% to 5% as 100% to 95%. **These two patches are the key.**

2-5. Input Module Memory Expansion Board Installation (for input modules with fiber user inputs)

This procedure upgrades a 32-MP Input Module to 64-MP. The procedure applies only to 32-MP Input Modules with fiber user inputs.

Required parts: A memory expansion kit containing a 32-MP Memory Expansion Board and mounting hardware.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

1. Remove the Input Module to be upgraded. Refer to procedure 4-4, page 4-4.
2. Plug the Memory Expansion Board onto the three memory expansion connectors (see Figure 2-41). Be sure that the board is fully seated on each of the three connectors.

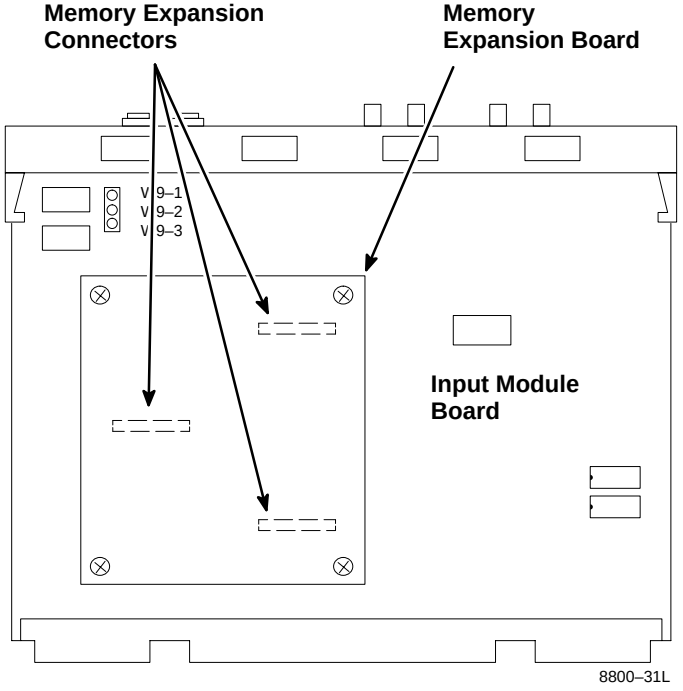


Figure 2-41.

3. Install the mounting hardware (4 sets) as shown in Figure 2-42.
4. Reinstall the input module in the IMS card cage.

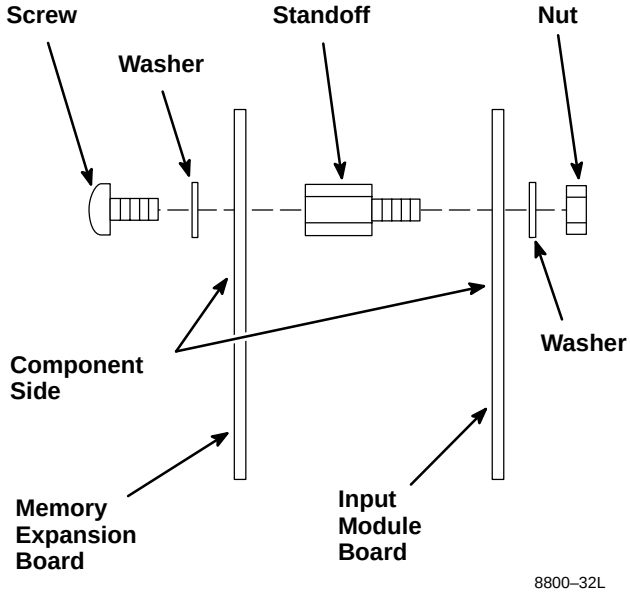


Figure 2-42.

Section 3 – Adjustments

3-1. Power Supply

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

Specification

The power supply voltages must be set as follows:

+5 ± 0.2 VDC
+12 ± 0.5 VDC
–12 ± 0.5 VDC

Measurement/Adjustment

1. Open the front door of the 8800.
2. Connect a voltmeter to the appropriate test points on the front of the card cage. Refer to Figure 3-1. Measure each voltage. If any of the voltages require adjustment, perform the remaining steps of this procedure.

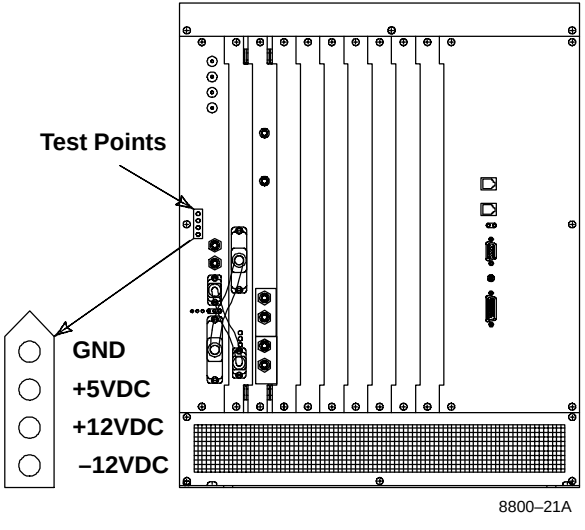


Figure 3-1.

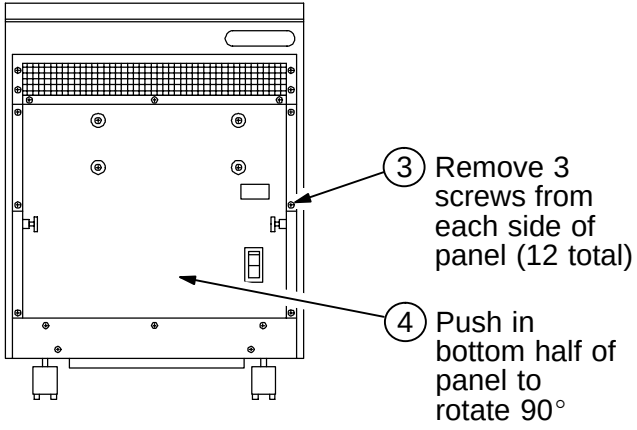


Figure 3-2.

5. Adjust the voltages as required. The voltages are adjusted by inserting a small flat blade screwdriver through the access holes on the power supply. Turn the screwdriver clockwise to increase the voltage, counterclockwise to decrease the voltage. Refer to Figure 3-3.

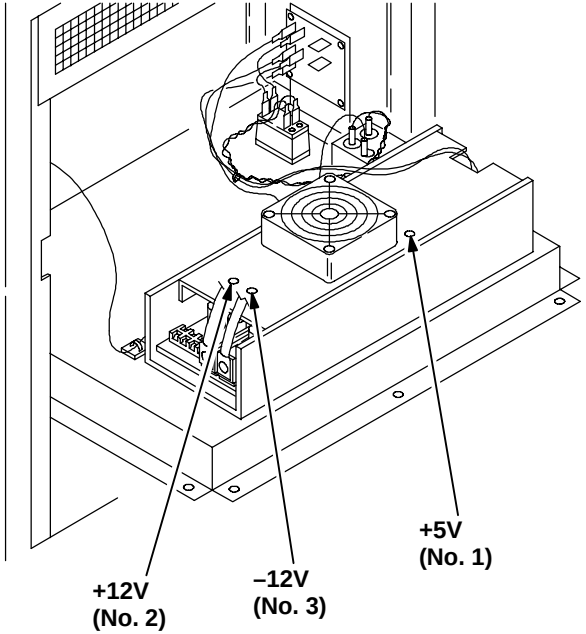


Figure 3-3.

Section 4 – Disassembly/Reassembly

4-1. Top Cover

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

Note

Because the top cover is secured by friction-fit pins, a high degree of upward force must be applied when removing the cover (Step 5).

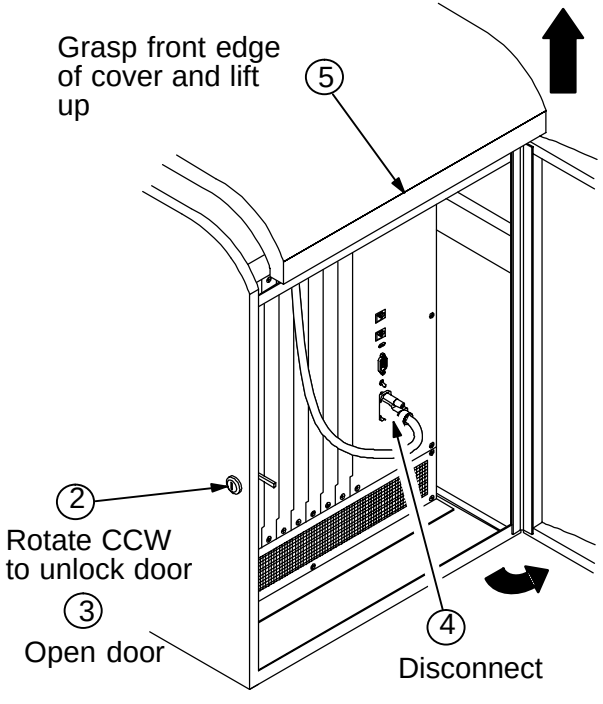


Figure 4-1.

4-2. Output Module

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Open the front door of the 8800.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

Note

When replacing IMS modules, the screws which secure the module to the card cage must be used to ensure proper grounding.

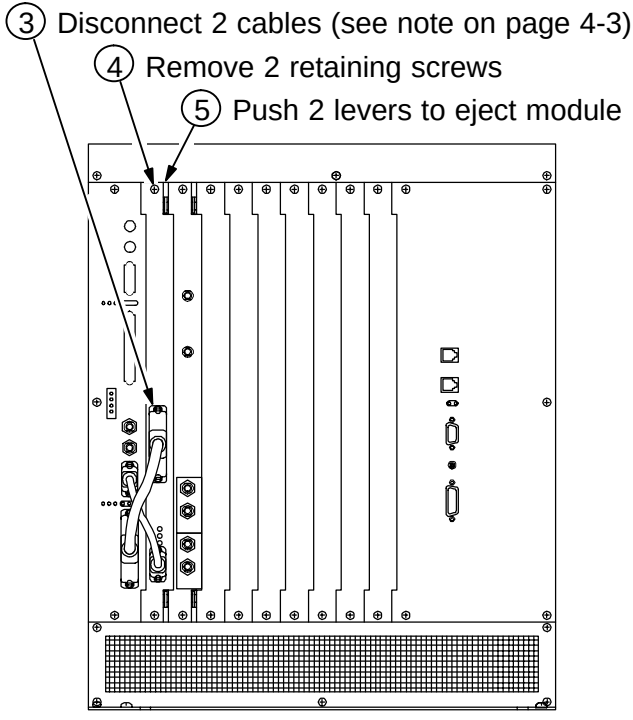


Figure 4-2.

Note

When performing Step 3 on the previous page: If the output module in Slot 0 is being removed, and a second output module is present in Slot 1, the cables must be disconnected from both output modules.

4-3. Output Module EPROM

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs, and check the polarity notch on EPROMs to ensure that they are oriented correctly.

1. Remove the output module from the card cage (refer to procedure 4-2).
2. Remove the EPROM from the output module.

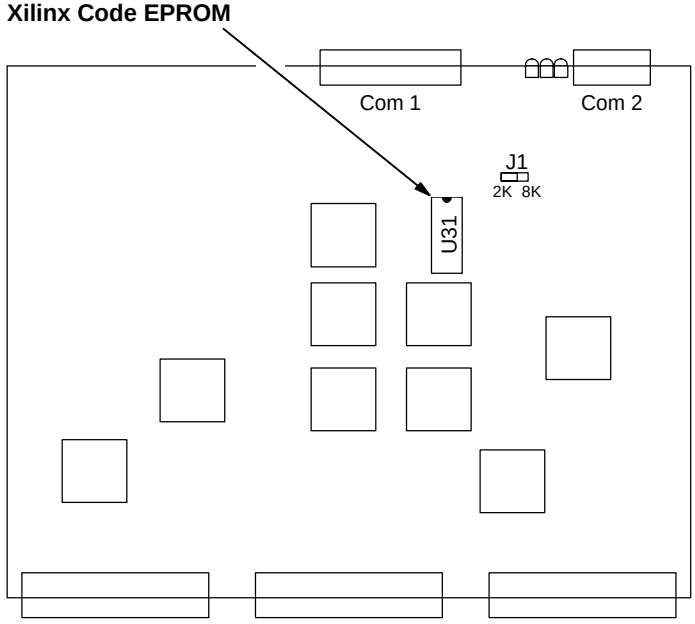


Figure 4-3.

4-4. Input Module

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Open the front door of the 8800.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

Note

When replacing IMS modules, the screws which secure the module to the card cage must be used to ensure proper grounding.

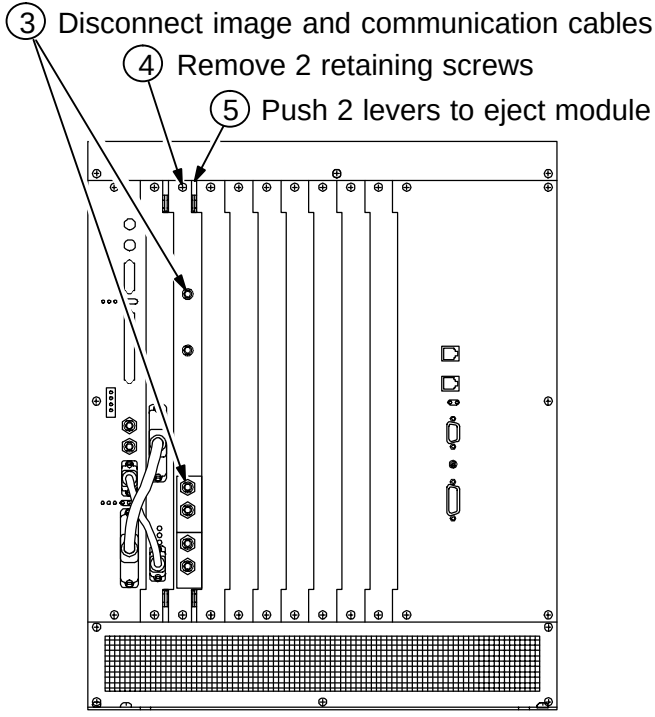


Figure 4-4.

4-5. 32 MP Input Module EPROMs (Copper user inputs)

This procedure applies to 32-MP Input modules with copper user inputs.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs, and check the polarity notch on EPROMs to ensure that they are oriented correctly.

1. Remove the input module from the card cage (refer to procedure 4-4).
2. Remove the appropriate EPROM(s) from the input module.

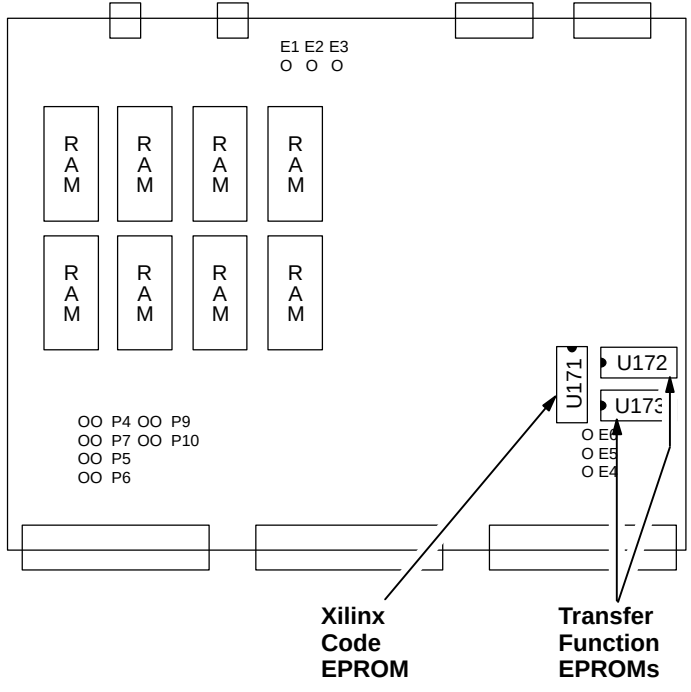


Figure 4-5.

4-6. 64 MP Input Module EPROMs (Copper user inputs)

This procedure applies to 64-MP input modules with copper user inputs (now obsolete).

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs, and check the polarity notch on EPROMs to ensure that they are oriented correctly.

1. Remove the input module from the card cage (refer to procedure 4-4).
2. Remove the appropriate EPROM(s) from the input module.

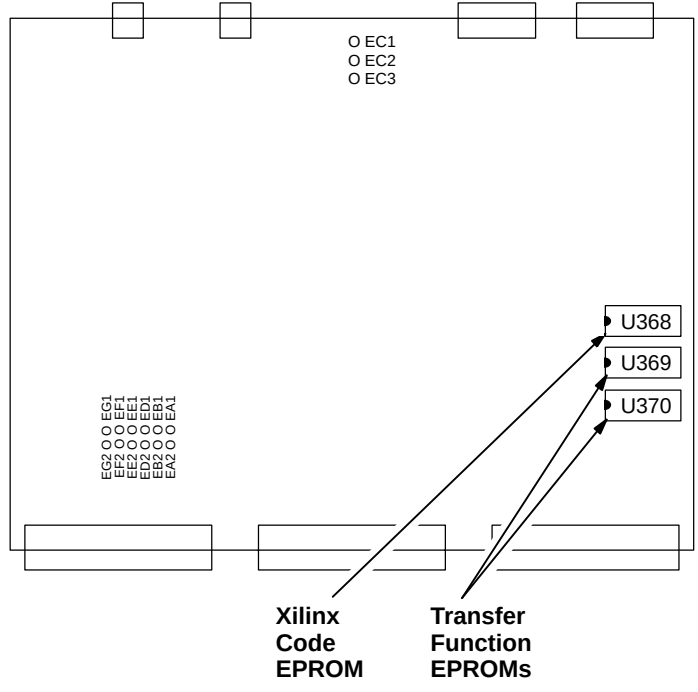


Figure 4-6.

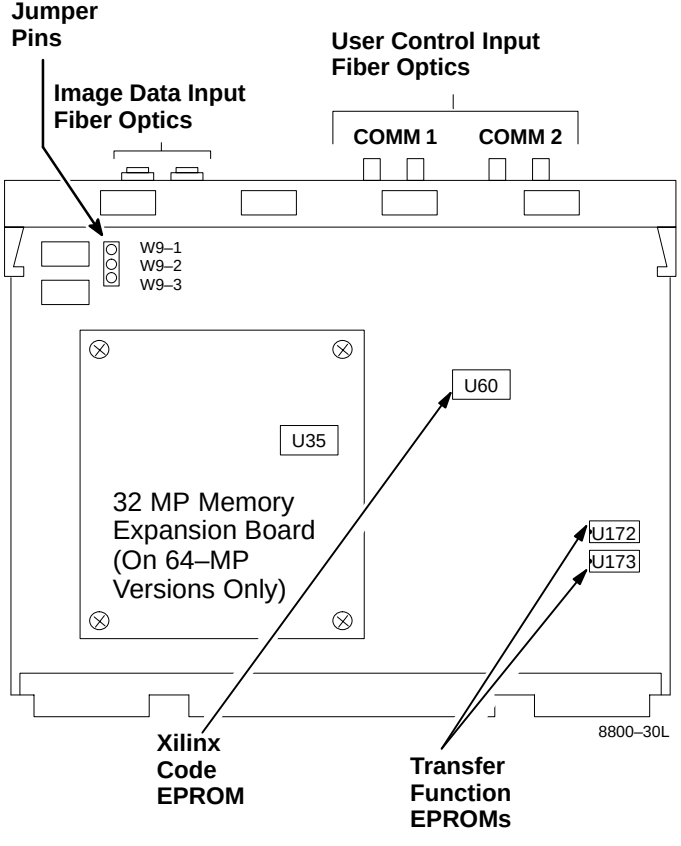
4-7. 32/64 MP Input Module EPROMs
(Fiber user inputs)

This procedure applies to 32-MP and 64-MP input modules with fiber user inputs.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs, and check the polarity notch on EPROMs to ensure that they are oriented correctly.

1. Remove the input module from the card cage (refer to procedure 4-4).
2. Remove the appropriate EPROM(s) from the input module.



4-8. System Controller PWA

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Open the front door of the 8800.
3. Disconnect the local panel cable and telephone line (if present) from the front of the card cage.

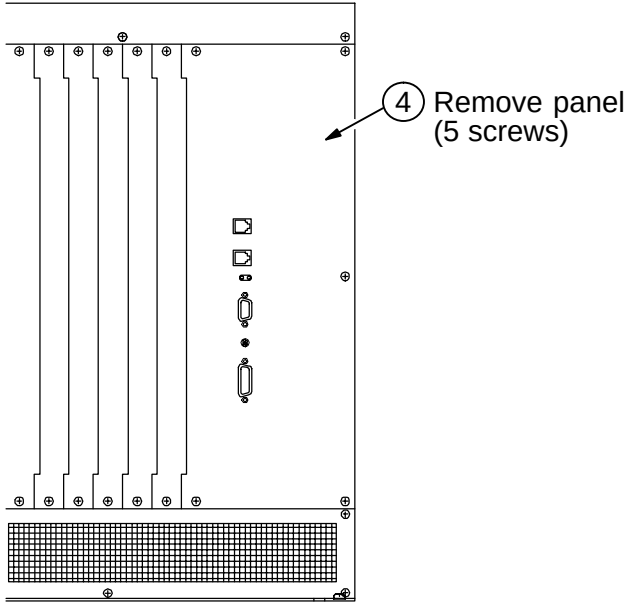


Figure 4-7.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

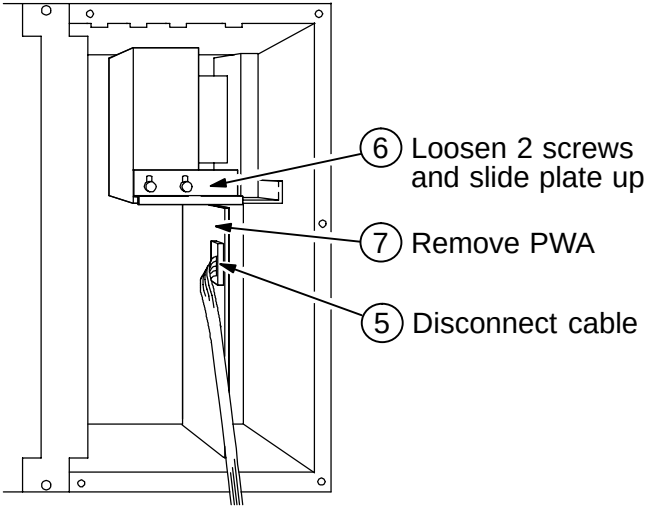


Figure 4-8.

Note

Whenever a new System Controller PWA is installed, initialize the System Controller NVRAM as described below, then set the system clock via MPC.

a. Press the Reset (red) and Abort (black) switches simultaneously.

b. Release the Reset switch.

c. Wait until the red LEDs turn off.

d. Release the Abort switch.

4-9. System Controller EPROMs

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs. Check the polarity notch on EPROMs to ensure that they are oriented correctly. Note that U3 and U5 are not as long as their sockets; install them as shown in Figure 4-9.

1. Remove the system controller PWA from the card cage (refer to procedure 4-8).
2. Remove the appropriate EPROM(s) from the PWA.

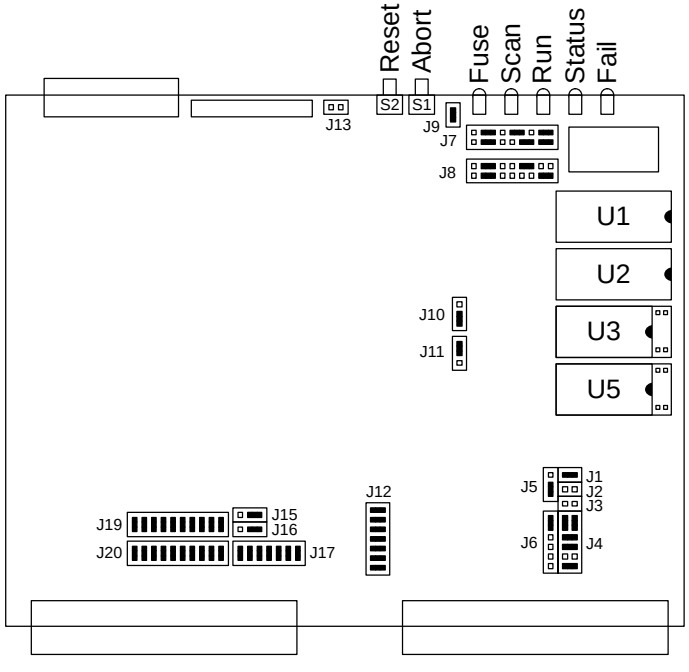


Figure 4-9.

4-10. Local Panel Interface

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

This procedure applies to either the U.S. version (which contains a modem) or the O.U.S. version (which does not contain a modem).

1. Turn off the 8800 and unplug its power cord.
2. Open the front door of the 8800.
3. Disconnect the local panel cable and telephone line (if present) from the front of the card cage.

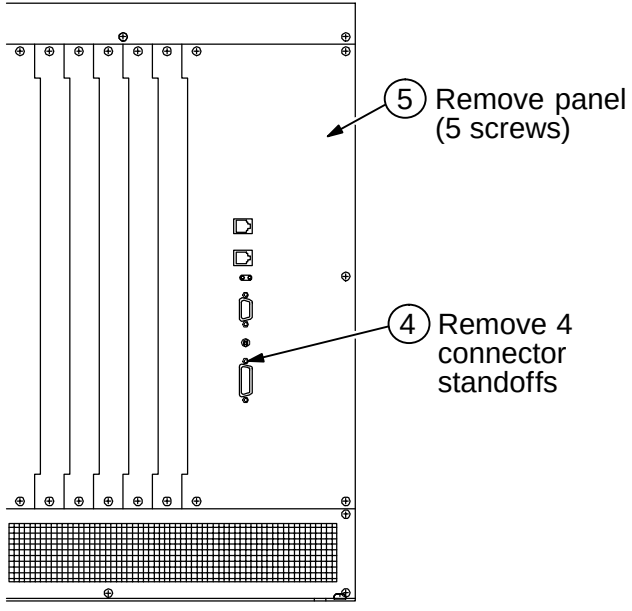


Figure 4-10.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

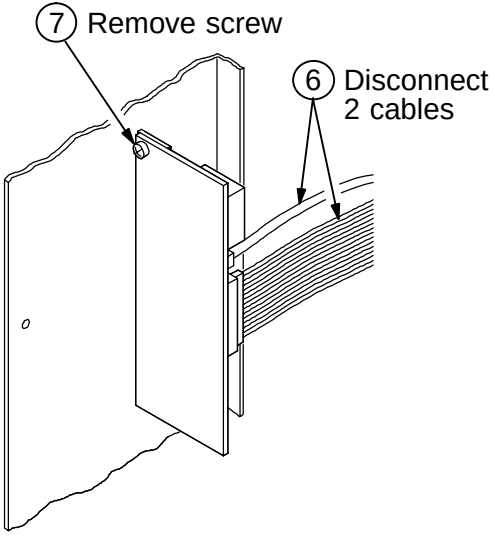


Figure 4-11.

4-11. Fiber Interface PWA

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Open the front door of the 8800.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

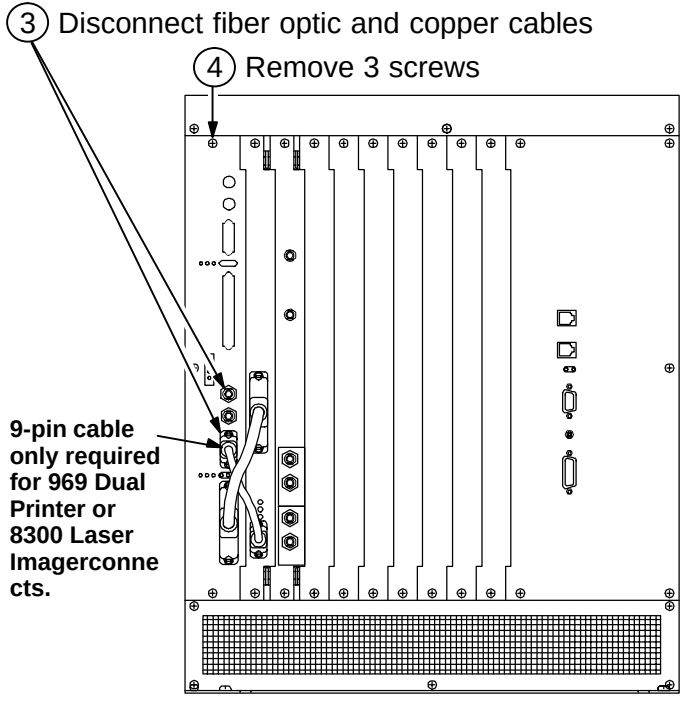


Figure 4-12.

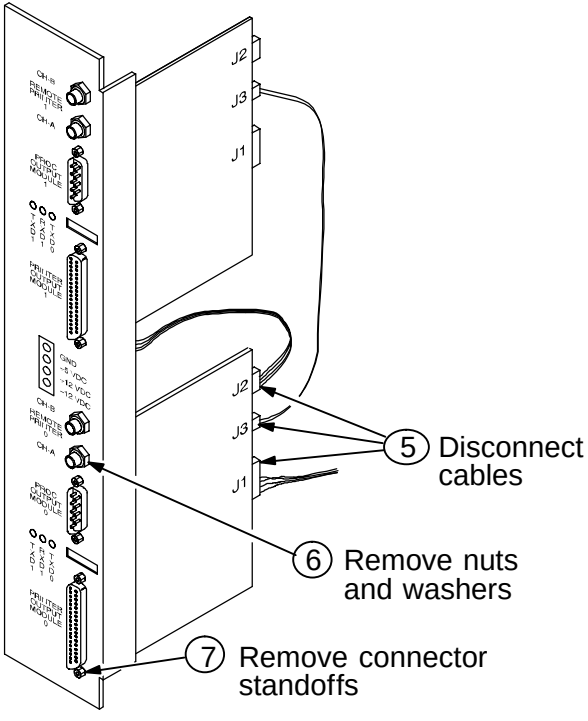

J2
J3
J1
J2
J3
J1
5 Disconnect cables
6 Remove nuts and washers
7 Remove connector standoffs

Figure 4-13.

4-12. Power Supply

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

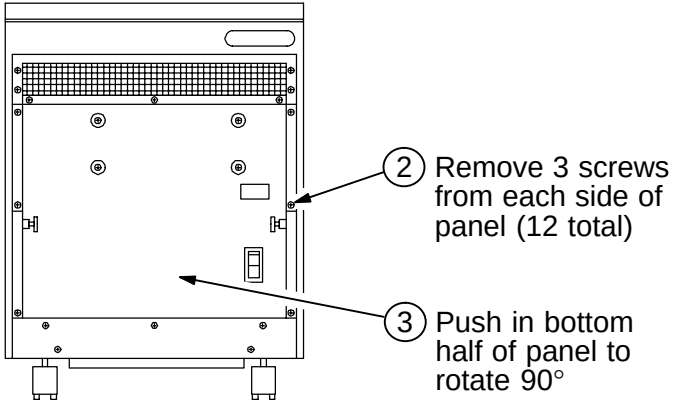


Figure 4-14.

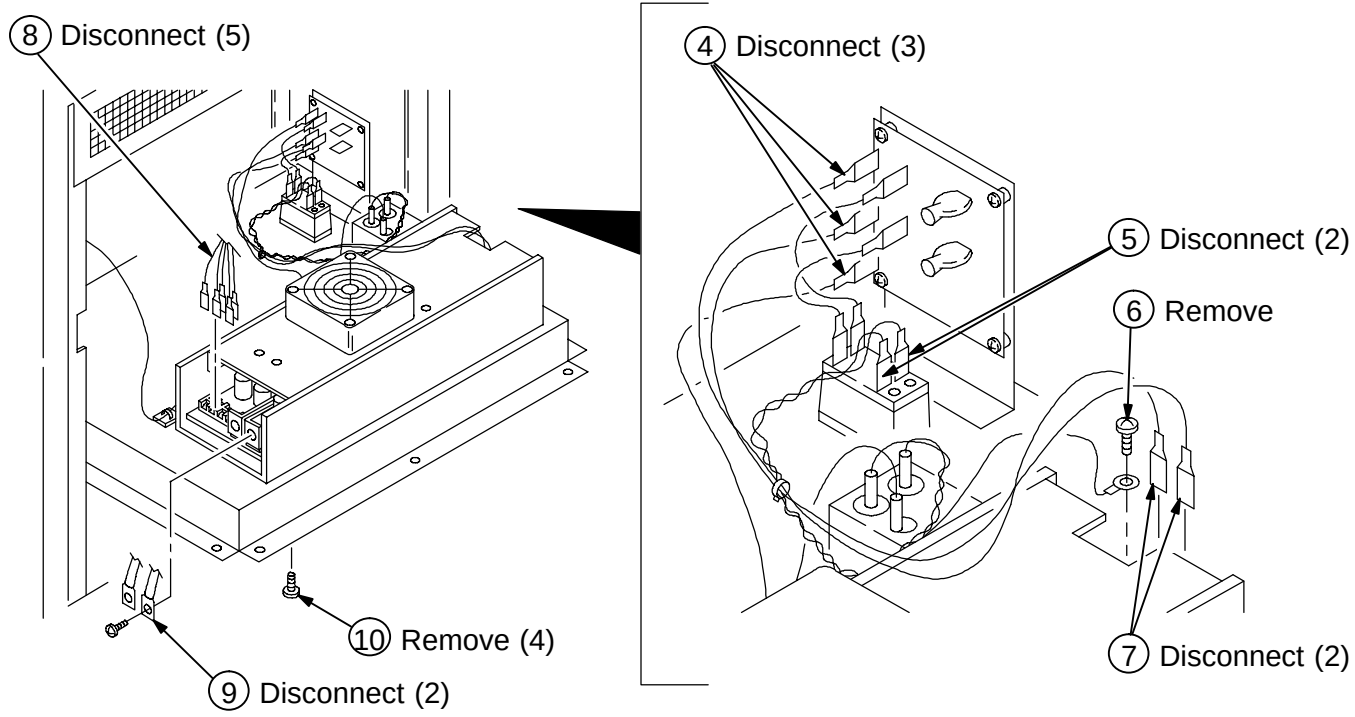

8 Disconnect (5)
4 Disconnect (3)
5 Disconnect (2)
6 Remove
10 Remove (4)
9 Disconnect (2)
7 Disconnect (2)

Figure 4-15.

4-13. MOV Board

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

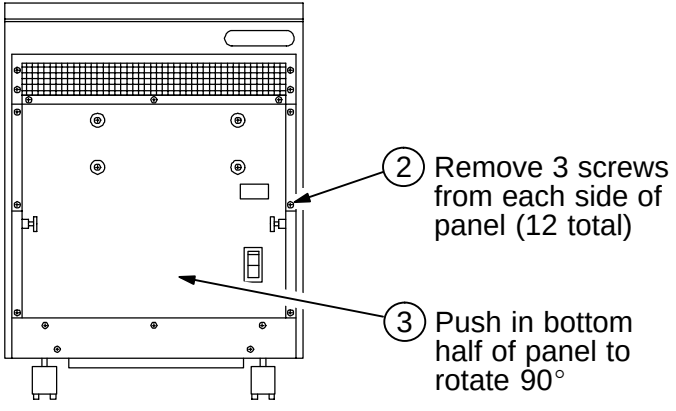


Figure 4-16.

Note

The MOV PWA must be removed from the circuit if the 8800 is installed in the UK, Austria, Belgium, Denmark, Finland, Norway, or Sweden. Refer to Section 2-1-1 for information on cabling with the MOV board removed.

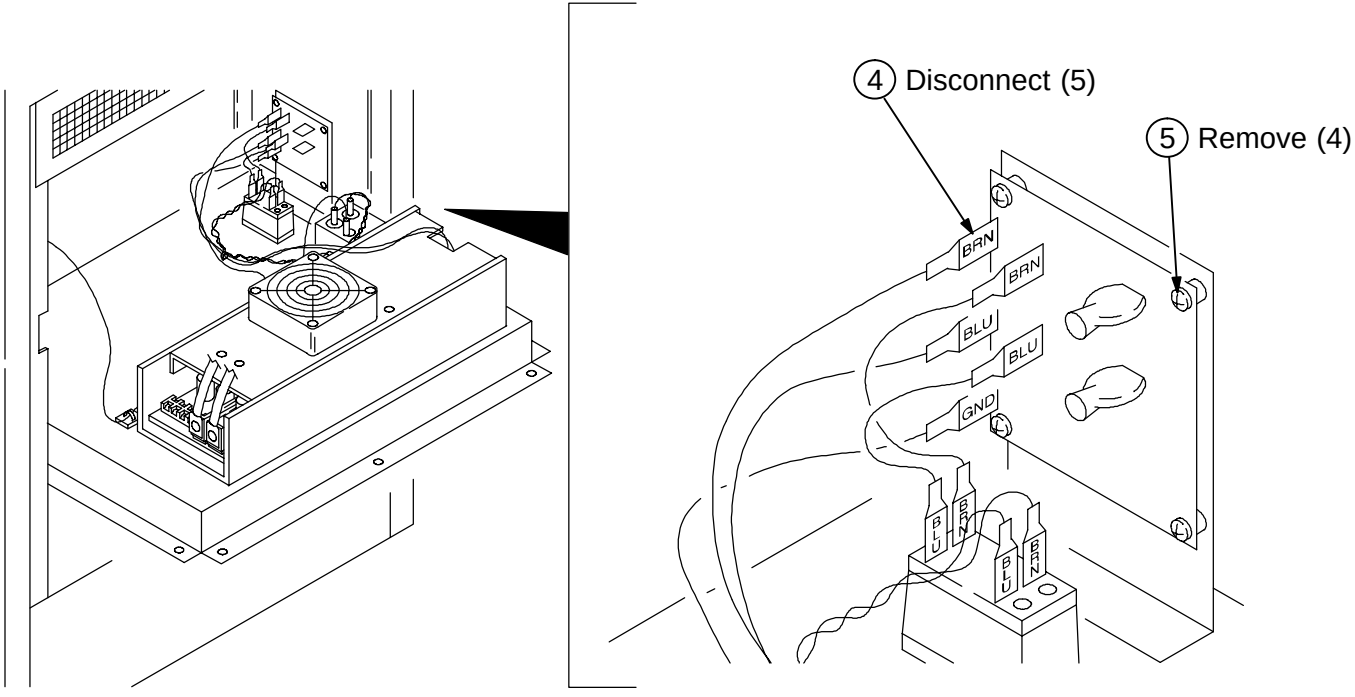


Figure 4-17.

4-14. Circuit Breaker

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

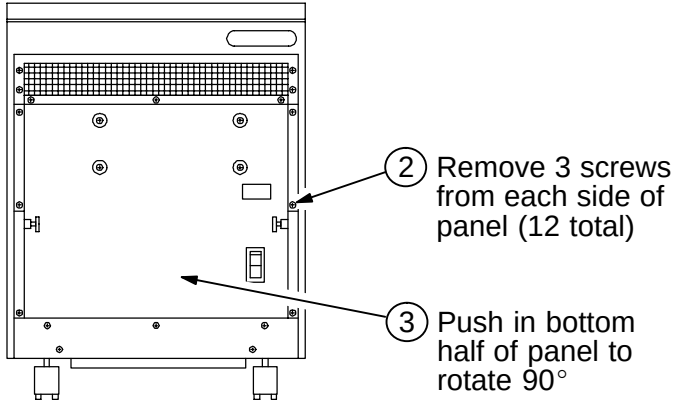


Figure 4-18.

Note
The MOV board is not present in the UK, Austria, Belgium Denmark, Finland, Norway, or Sweden. Refer to Section 2 for connections, if no MOV board is present.

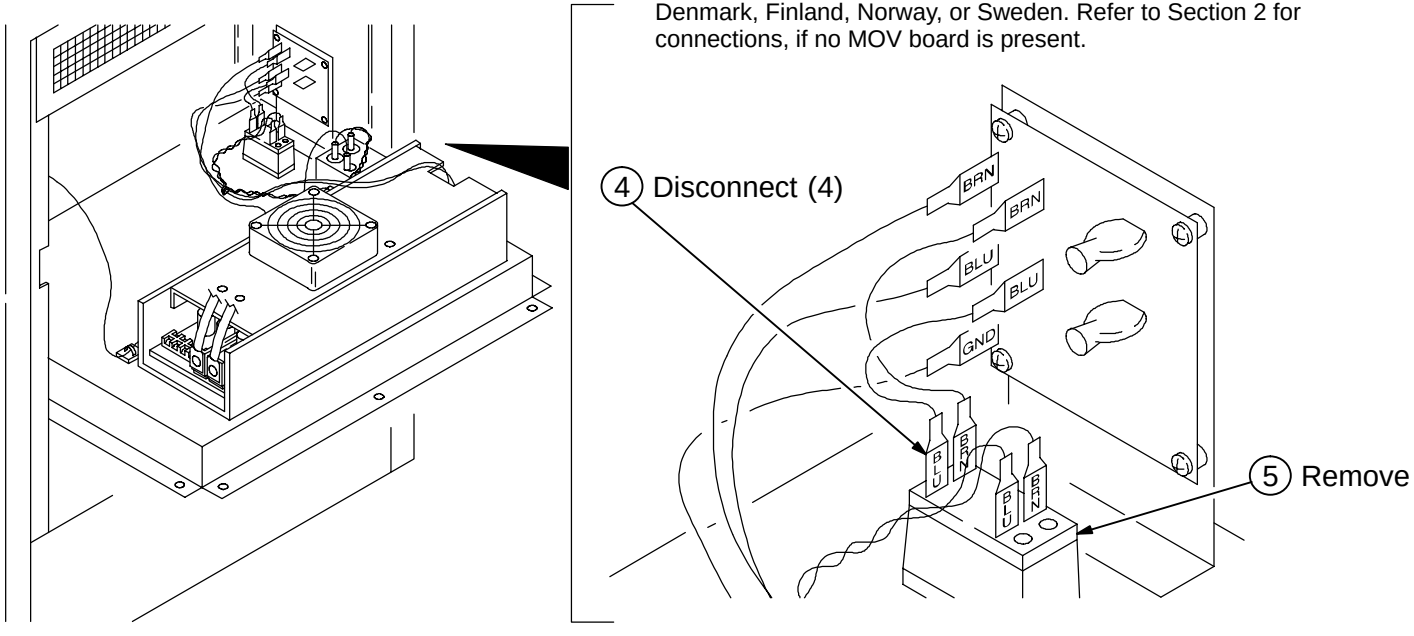


Figure 4-19.

4-15. Bottom Fan Assembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

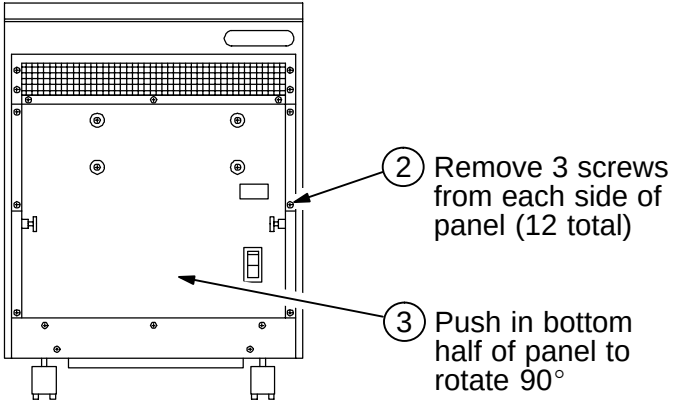


Figure 4-20.

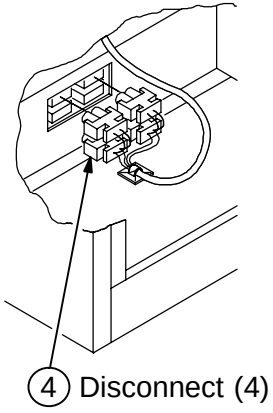


Figure 4-21.

5. Open the front door of the 8800.

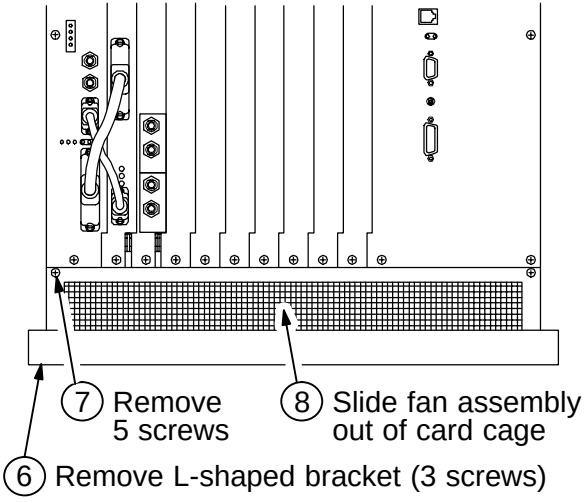


Figure 4-22.

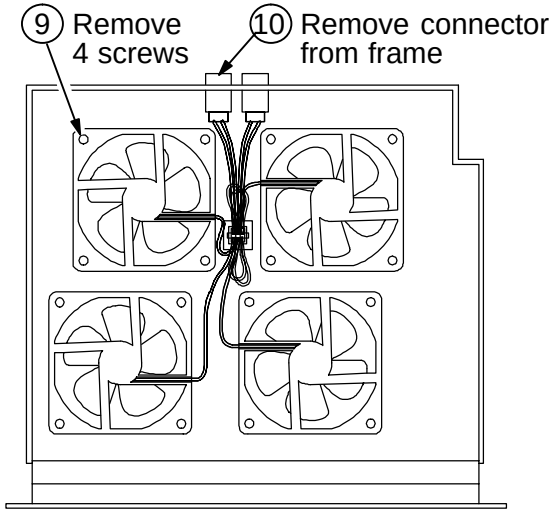


Figure 4-23.

Note

Ensure that the replacement fan is oriented correctly before mounting the fan to the housing. Airflow is from the bottom to the top of the card cage.

4-16. Top Fan Assembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Remove the top cover. Refer to procedure 4-1.

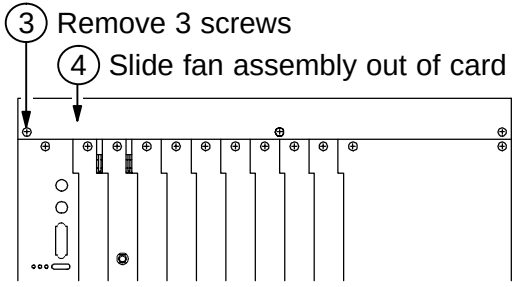


Figure 4-24.

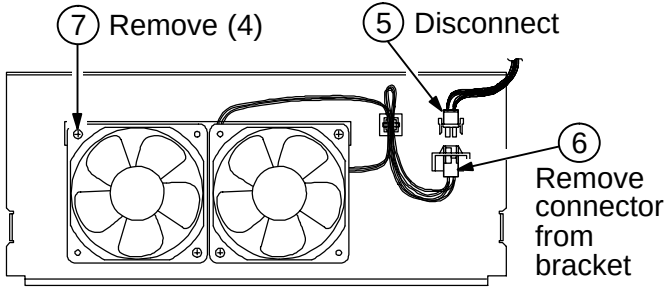


Figure 4-25.

Note

Ensure that the replacement fan is oriented correctly before mounting the fan to the housing. Airflow is toward the top of the card cage (into the bottom side of the top cover).

4-17. Card Cage

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.

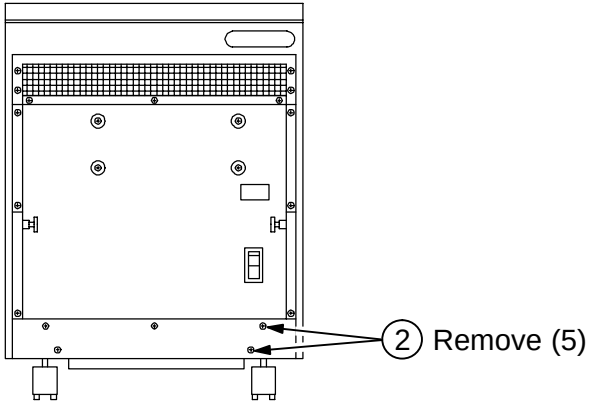


Figure 4-26.

3. Remove the top cover. Refer to procedure 4-1.
4. Disconnect the telephone line (if present) and all fiber optic cables from the front of the card cage.

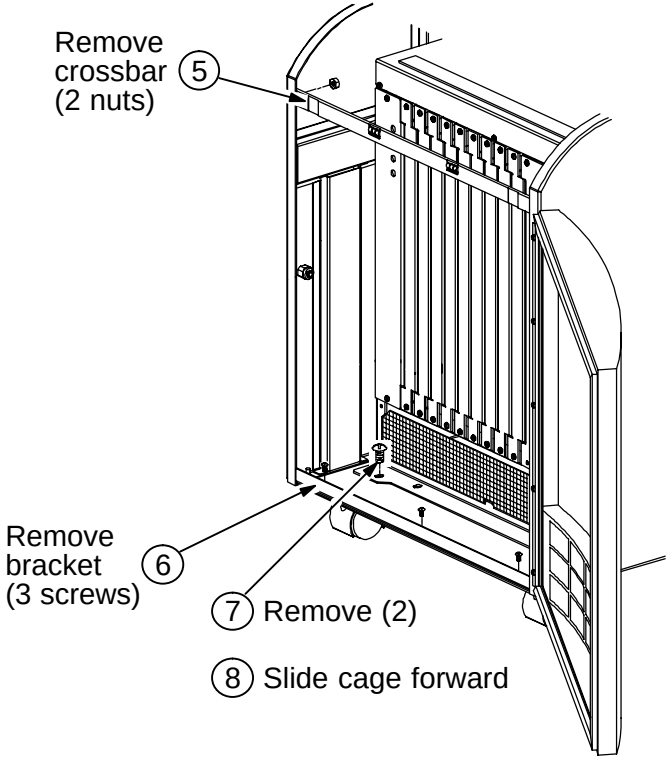

Remove
crossbar
(2 nuts)
5
Remove
bracket
(3 screws)
6
7 Remove (2)
8 Slide cage forward

Figure 4-27.

4-18. Local Panel Assembly

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Remove the top cover. Refer to procedure 4-1.

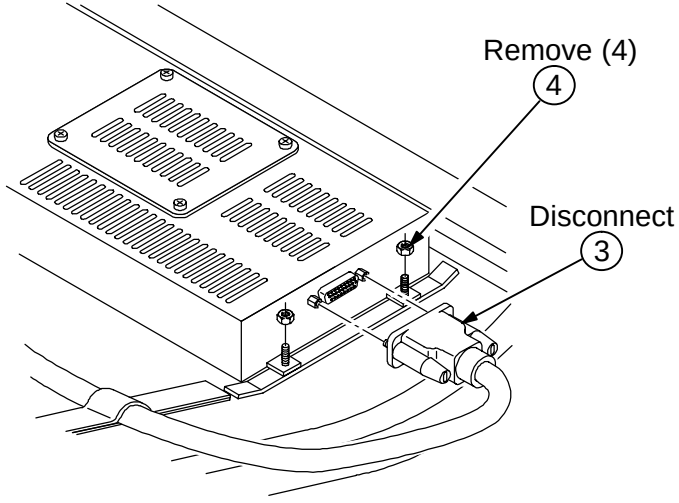


Figure 4-28.

4-19. Local Panel EPROMs

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

1. Turn off the 8800 and unplug its power cord.
2. Remove the top cover. Refer to procedure 4-1.

Caution

To avoid damage to sensitive electronic components, always wear an anti-static strap when handling PWAs or EPROMs.

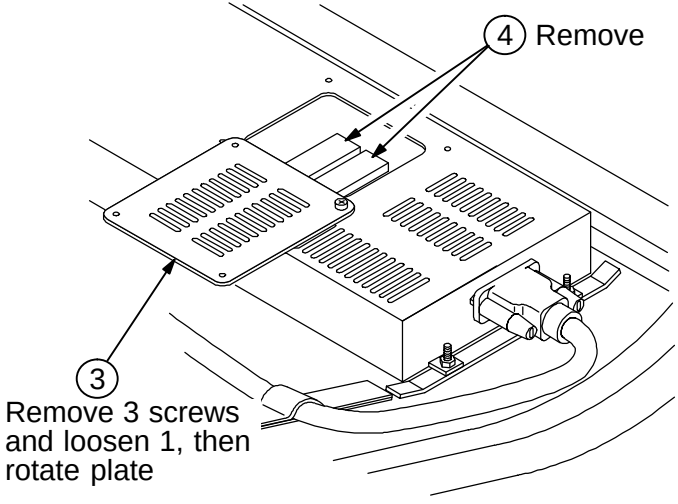


Figure 4-29.

Section 5 – Additional Information

5-1. Required Tools

In addition to standard hand tools (screwdrivers, wrenches, etc.), the tools listed in this subsection are required to service the 8800. Note the following:

- The listed tools are a subset of the tools required to service the 969 HQ.
- Items 1 through 3 are provided to Kodak service technicians. Non-Kodak service technicians must obtain them locally.
- Items 4 through 7 are available from the Service Parts Center (SPC).
- Items 8 through 11 are available from TECHNI-TOOL, Inc. If equivalent tools cannot be obtained from other sources, contact TECHNI-TOOL at the following address:

  TECHNI-TOOL, Inc.
  5 Apollo Rd. P.O. Box 368
  Plymouth Meeting, PA 19462
  Attn: Bill Bezar
  (215) 825-4990

1. Toshiba T3300 notebook personal computer (or equivalent) with:

   386SL 25 MHz processor
   4 MB RAM
   120 MB hard disk
   PCMCIA modem

Note

The specifications listed above reflect the *minimum configuration* required to run the MPC for Windows 95™ software.

2. Fluke DVM, Model 87 (or equivalent)
3. Dual trace oscilloscope meeting the following specifications:

   Band Width: 0 to 100 MHz
   Sensitivity: 0.5 mv
   Accuracy: ± 3%

4. Cable, MPC Serial Port 26-1011-4592-3
5. Connector Assembly, 9-Pin Input/Output Module Loopback (two required) 78-8075-2585-8
6. Connector Assembly, 37-PIn Output Module Loopback 78-8077-4211-5
7. DEIB Test Pattern (SMPTE) EPROM Kit 78-8063-3993-9
8. Connector, BNC T, F-M-F 458TE266
9. Terminator, BNC, 75 Ohm 458TE841
10. Adapter, BNC 458TE1468
11. Static Protection Kit (includes a static dissipative work surface, a ground cord, two sizes of wrist bands, and an alligator clip) 780ST8501
12. MPC for Windows 95™ software (version 1.20 or higher) Distributed by Kodak Service
13. Hardlock Key Distributed by Kodak Service

5-2. Adapter Cable Pinouts

Figures Figure 5-1 through Figure 5-4 provide the pinouts for the various host adapter cables that can be connected to the UKEIB.

RS232 Host Adapter Cable (78-8071-8331-0)

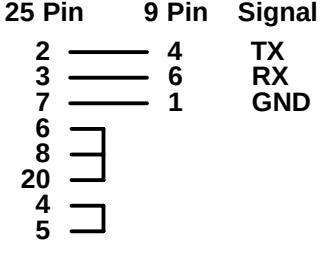


Figure 5-1.

RS422 Host Adapter Cable (78-8077-4159-6)

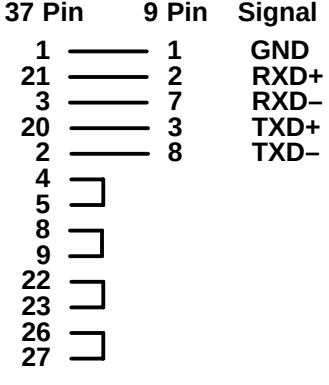


Figure 5-2.

37 to 26 Pin Adapter Cable (78-8063-4008-7)

37 Pin	26 Pin	Signal
1	1	GND
21	2	RX1+
3	3	RX1–
20	11	TX1+
2	12	TX1–
22	6	FT–
7	7	GND
4	4	FT+
11	5	GND
25	8	+12V
30	9	+12V
31	10	+12V
32	19	+12V
13	16	GND
14	17	GND
35	26	+12V
17	25	GND
5		
9		
23		
27		

Figure 5-3.

Note

The 37 to 26 Pin Adapter Cable is used to connect the Kodak Digital Disk Reader (DDR) to the UKEIB.

Genesis Cable (GE only)

25 Pin	9 Pin	Signal
1	1	GND
9	2	RXD+
8	3	TXD+
22	7	RXD–
21	8	TXD–

Figure 5-4.

5-3. Preventive Maintenance

An air filter is located inside the front door of the 8800. Check the condition of the filter on every visit. If necessary, replace the filter.

5-4. Serial Number Label Location

The serial number label is located on the rear of the 8800. Use this serial number to report all service activity. Customers should be instructed to provide the model and serial number when requesting service.

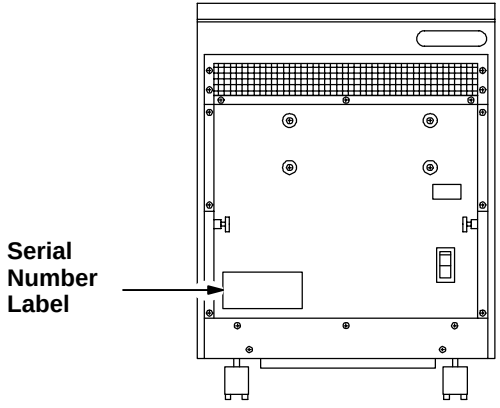


Figure 5-5.

Section 6 – Theory of Operation

6-1. VEIB

The VEIB (Video External Interface Box) serves as the image interface between a video modality and the input module. The VEIB is designed to work only with standard composite video signals (which contain embedded sync pulses). The VEIB samples the incoming video data when an image acquisition is requested. The timing of this sampling is based on the pixel clock frequency. The pixel clock signal can be generated by the host and sent to the VEIB, or generated internal to the VEIB by a phase lock loop (PLL) module. Each time the VEIB samples the incoming video signal, it detects an analog voltage level. These analog readings are then converted to digital values. The digital data is run through a parallel to serial converter, then passed on to a fiber optic transmitter that sends the data to the input module.

6-2. EVEIB

The EVEIB (Enhanced Video External Interface Box) is similar to the VEIB with the difference that the EVEIB has optional external sync inputs for one of its two input ports. The EVEIB can be ordered with or without the external sync inputs.

There are two external sync inputs:

- Vertical Sync.
- Horizontal/Composite Sync.

These two sync inputs apply only to port 0.

Port 0 can be used with three types of sync formats:

- Separate horizontal and vertical sync signals.
- Composite horizontal/vertical sync signal applied to the Horizontal/Composite Sync input. In this case the Vertical Sync input is unused.

- Standard composite video. In this case neither of the external sync inputs are used. Sync pulses are embedded in the standard video signal and are detected by circuitry within the EVEIB.

During installation, the MPC must be used to configure the EVEIB for the appropriate type of sync format.

Port 1 can be used only with a standard composite video signal, which contains internal embedded sync pulses. (This is the same type of video signal that the VEIB expects.)

If the EVEIB does not have the optional external sync inputs, both port 0 and port 1 are limited to standard composite video signals.

6-3. DEIB

The DEIB (Digital External Interface Box) serves as the image interface between a digital modality and the input module. The host digital signal connects to the DEIB. The digital data from the host is run through a parallel to serial converter, then passed on to a fiber optic transmitter that sends the data to the input module.

Note

The digital data from the host computer must conform to the Kodak digital interface protocol standard.

6-4. UKEIB

The UKEIB (Universal Keypad External Interface Box) serves as the control interface between a host control modality and the input module. The UKEIB accepts RS232 or RS422 signals from the host. These signals are converted to TTL levels and passed on to a fiber optic transmitter that sends the data to the input module. The UKEIB also receives signals from the input module. These signals are converted from TTL levels to RS232 or RS422, and are then sent on to the host.

The UKEIB also supports the use of a Kodak translator keypad. The translator keypad is required for hosts that are programmed with OEM commands. The translator keypad translates the OEM commands into a format that can be understood by the 8800. In this case the incoming host signals are routed through the UKEIB and out to the translator keypad. The translated commands are then sent back through the UKEIB and on to the input module.

The routing of the signals within the UKEIB is determined by a set of switches.

6-5. KFEIB

The KFEIB (Keypad/Fiber External Interface Box) serves as the control interface between a 969 HQ User Keypad and the input module. The KFEIB accepts RS422 signals from the keypad. These signals are converted to TTL levels and passed on to a fiber optic transmitter that sends the data to the input module. The KFEIB also receives signals from the input module. These signals are converted from TTL levels to RS422, and are then sent on to the keypad.

6-6. System Controller

The system controller controls data flow within and between the input and output modules. It includes a microprocessor and EPROMs that contain the IMS system software. It also includes a real-time clock that is used to time/date stamp errors, and a pair of serial ports that allow the MPC or a local keypad to be connected to the IMS.

6-7. Input Module

The input module receives image and control data from the various EIBs via fiber optic cable. The input module includes 32 or 64 megapixels (9- or 12-bit) of image memory for storing acquired images. It also includes EPROMs that contain film models and transfer function tables.

The 8800 can accommodate up to 8 input modules (7 if two Dual Printers are connected).

6-8. Output Module

The output module accepts and interpolates image data from the input modules. The output module includes two communication ports. The 37-pin connector is for the printer. In addition to sending image data to the printer, this port also handles communication between the printer and the output module. The 9-pin connector is for additional communications when a 969 Dual Printer or 8300 Laser Imager is present.

The 8800 can accommodate one or two output modules. One output module is required for each printer connected to the 8800.

6-9. Local Fiber Interface

The local fiber interface installs in the 8800. The local fiber interface connects to the output module via copper cable, and connects to the Dual Printer via fiber optic cable. The local fiber interface receives differential signals from the output module, converts them to a serial stream of light pulses, and sends them to the Dual Printer or POEIB. The local fiber interface also receives serial light signals from the Dual Printer or POEIB, converts them to differential electrical signals, and sends them on to the output module.

The 8800 can accommodate one or two local fiber interface boards. One board is required for each printer connected to the 8800.

6-10. DPEIB

The DPEIB (Dual Printer External Interface Box) installs in the 969 HQ Dual Printer. The DPEIB connects to the local fiber interface via fiber optic cable, and connects to the printer and processor via copper cable. The DPEIB receives a serial stream of light pulses from the local fiber interface in the 8800, converts them to electrical differential signals, and sends them to the printer and the processor. The DPEIB also receives differential signals from the printer and the processor, converts them to light pulses, and sends them on to the local fiber interface in the 8800.

6-11. DPRI

The DPRI (Dual Printer Remote Interface) installs in the 8700/8500 Dual Printer. The DPRI connects to the 8800 local fiber interface via fiber optic cable. Within the 8700/8500 Dual Printer, the DPRI connects to the Host Interface Board (HIB) via copper cable. The DPRI receives a serial stream of light pulses from the local fiber interface, converts them to differential signals, and sends them to the 8700/8500 System Controller Board (SCB) via the HIB. The DPRI also receives differential signals from the SCB/HIB, converts them to light pulses, and sends them on to the local fiber interface.

6-12. POEIB

The POEIB (Protocol Output External Interface Box) is a bridging device that allows an 8800 Multi-Input Manager or a 969 HQ Laser Imager to drive a 8300 Laser Imager. The 969 must have an 8800 Printer Interface Kit, which adds a second output module and local fiber interface, installed.

On the input side, the POEIB connects by a fiber optic cable to the local fiber interface in an 8800 or 969. On the output side, two copper cables connect the POEIB to a Digital Input Board in the 8300.

The local fiber interface, in the 8800 or 969, transmits image data in the form of a fiber optic serial bit stream. The 8300 Digital Input Board conforms to the standard Kodak digital interface which expects image data in an 8-bit parallel format at standard RS-422 signal levels. The POEIB translates between these two interfaces.

The POEIB has three main functions:

- Signal Conversion – The POEIB converts the stream of light pulses it receives from the local fiber interface to electrical levels used within the POEIB.
- Serial-to-Parallel Conversion – The POEIB converts the protocol of the image data sent from the output module, via the local fiber interface, to an 8-bit Kodak standard digital protocol required by the 8300.
- Command Communication – The POEIB passes on acquire and print command sequences, sent from the 8800 or 969, to the 8300 Laser Imager. These commands cause the 8300 to acquire an image from the output module (via the POEIB) and to print it.

Section 7 – Diagrams

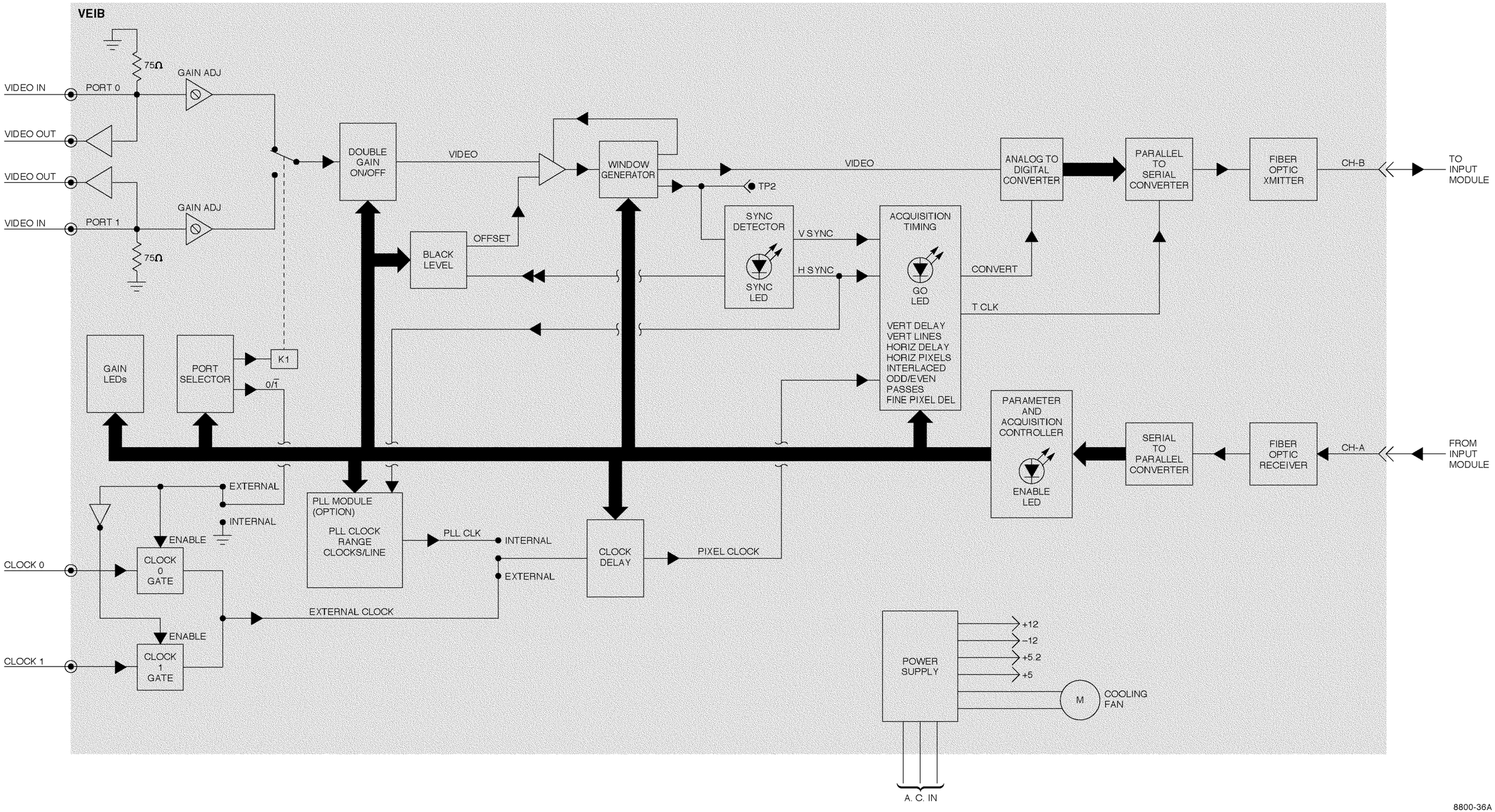
7-1. IMS Functional Diagram

This is an oversized drawing, see printed manual for art.

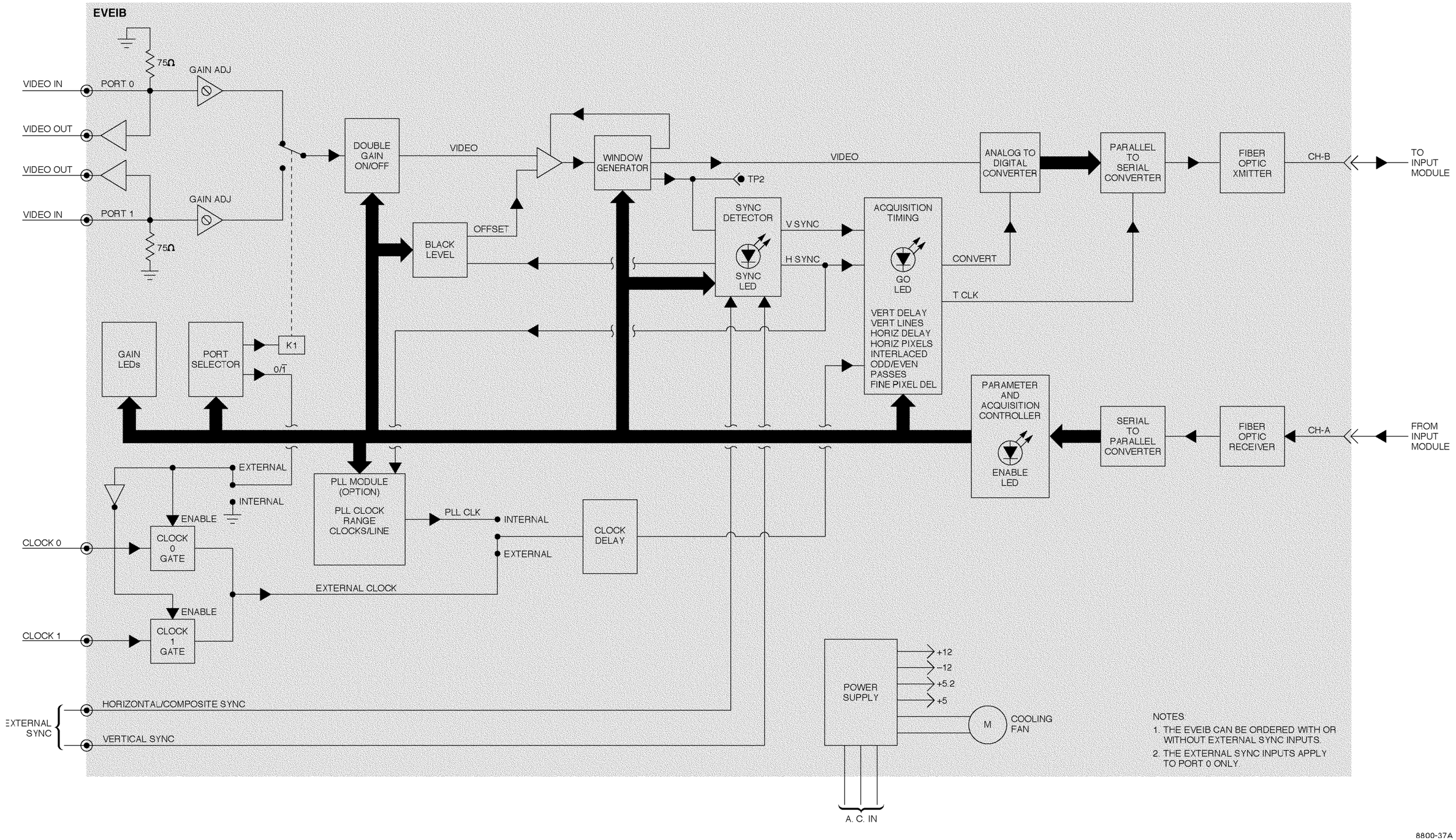
7-2. Keypad, UKEIB, KFEIB Diagrams

This is an oversized drawing, see printed manual for art.

7-3. VEIB Diagram

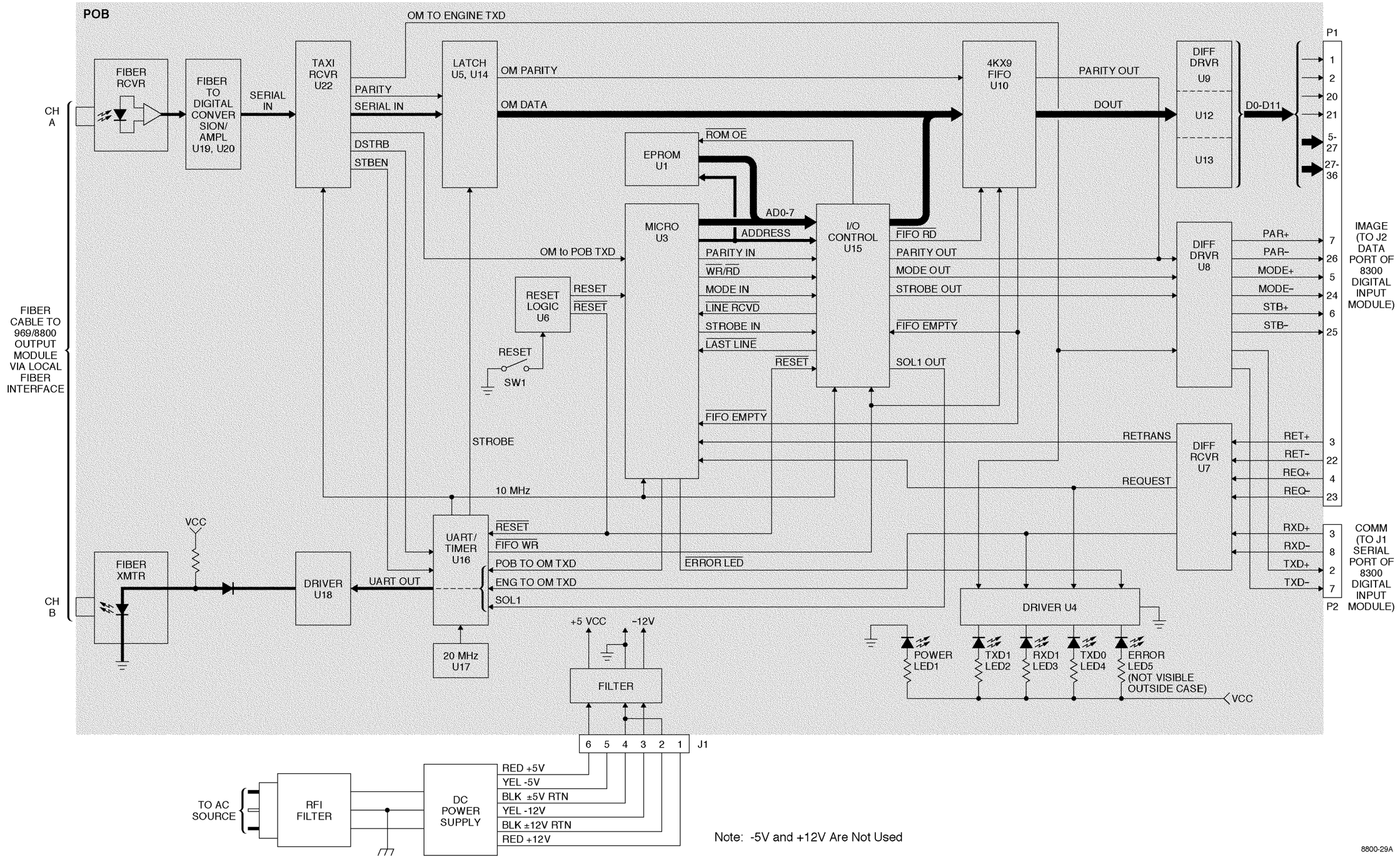


7-4. EVEIB Diagram

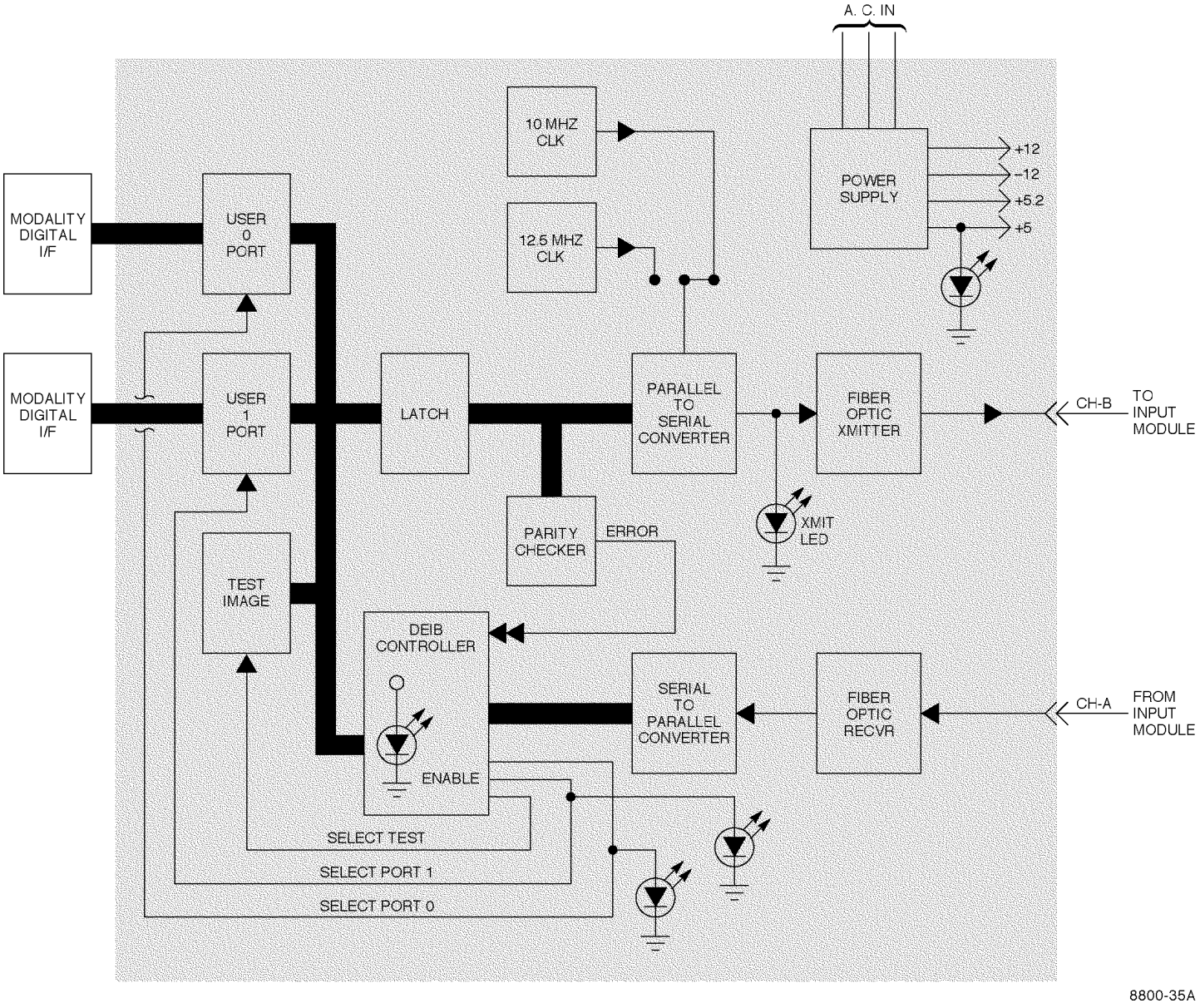


8800-37A

7-5. POEIB Diagram

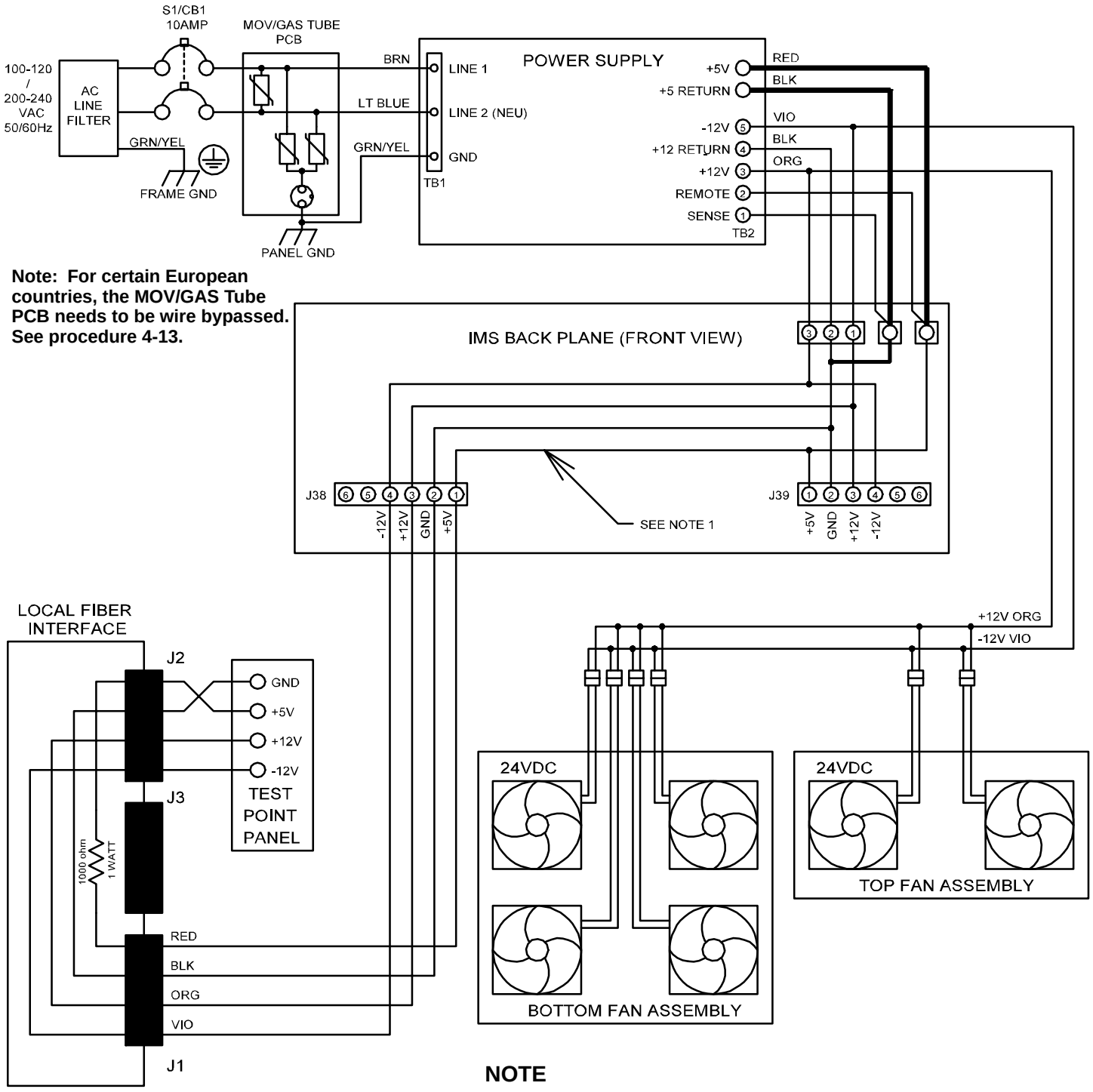


7-6. DEIB Diagram



8800-35A

7-7. IMS Power Distribution Diagram
(Prior to Serial Number 002055)



NOTE

1. **ENSURE THAT THE 1,000 OHM RESISTOR HAS BEEN REMOVED AND A WIRE JUMPER INSTALLED ON THE BACKPLANE (LEFT SIDE).**

Section 8 – Troubleshooting

8-1. 8800 Local Panel Error Messages

For 831/952 command set users: The 8800 local panel does not display any system wide errors. It only sets parameters.

Note

System wide error codes are displayed on the 969 HQ Local Panel, 8700/8500 Dual Printer Local Panel, 8300 Local Panel or Kodak User Keypad. To troubleshoot using error codes, refer to the 969 HQ or 8700 Service Manual.

8-1-1. Test Print Unsuccessful

This message indicates that an attempt to place a contrast or density test print in the print queue was unsuccessful. This message applies only to test prints initiated from the 8800 Local Panel.

To clear this message, perform the following steps. After each step, initiate another test print. If the test print fails, proceed to the next step.

1. Verify that the toggle switch on the front of the card cage is in the LOCAL KEYPAD position. (For the U.S. Local Panel interface version only.)
2. Power cycle the 8800 (notify users first; all images in memory will be lost).
3. Try to isolate the faulty component by running IMS diagnostics from MPC for Windows.
4. Initialize system controller NVRAM. Refer to subsection 8-3.

8-1-2. Unable to Set Default Parameters

This message is displayed if an attempt to write to input module NVRAM fails. Customer preference settings (contrast, density, border, and media size) are written to input module NVRAM when the SET button is pressed on the Local Panel.

To clear this message, perform the following steps. After each step, try setting parameters again. If the attempt fails, proceed to the next step.

1. Verify that the toggle switch on the front of the card cage is in the LOCAL KEYPAD position. (For the U.S. Local Panel interface version only.)
2. Power cycle the 8800 (notify users first; all images in memory will be lost).
3. Try to isolate the faulty component by running IMS diagnostics from MPC for Windows.
4. Initialize system controller NVRAM. Refer to subsection 8-3.

8-1-3. K1: The Laser Imager is Not Communicating

This message indicates the 8800 local panel cannot communicate with the IMS. This message is normal when either the modem or MPC port (on U.S. local panel interface PWA, the toggle switch would be in the **MPC** position) is active. Once the modem or MPC disconnects (on U.S. local panel interface PWA, the toggle switch is moved back to the **Local Keypad** position) the message disappears after a 10 second delay. Then, operation resumes.

If the K1 message persists:

- On U.S. versions, make sure the toggle switch is in the **Local Keypad** position. Use MPC to make sure the Local Connect Baud rate setting is 19200.
- On O.U.S. versions, use the MPC to make sure the Internal Modem Baud Rate setting is 19200.

Note

The Local Panel baud rate default is 19200 and cannot be set using MPC.

8-1-4. Local Panel will Not Initialize to its Main Menu Screen

Make sure baud rate setups are correct as follows:

- On U.S. versions, make sure the toggle switch is in the **Local Keypad** position. Use MPC to make sure the Local Connect Baud rate setting is 19200.
- On O.U.S. versions, use the MPC to make sure the Internal Modem Baud Rate setting is 19200.

Note

The Local Panel baud rate default is 19200 and cannot be set using MPC.

8-2. Printer Fiber Optic Link

Problems with the fiber optic link from the 8800 to the dual printer type are indicated on the dual printer's local panel by a **`Printer Malfunction P910`** error. The LEDs on the 969 Dual Printer EIB (DPEIB) or the 8700 Dual Printer Remote Interface (DPRI), the POEIB, the local fiber interface, and the output module can be used to troubleshoot this error condition. Refer to the table below.

Note

The DPEIB is located in the IMS cavity of the 969 Dual Printer. The DPRI is located in the electronics enclosure of the 8700 Dual Printer. The local fiber interface is located in the IMS card cage of the 8800, to the left of the first output module.

Symptom	Check	Possible Cause
1. TXD1 LED on local fiber interface does not blink.	1. Does the TXD1 LED on the output module blink?	1. **Yes:** 37-pin cable disconnected/bad, no power to local fiber interface (check voltages at test jacks), or local fiber interface bad. **No:** Bad output module.
2. RXD1 LED on local fiber interface does not blink.	2. Does the RXD1 LED on the DPEIB, DPRI, or, POEIB blink	2. **Yes:** Fiber optic cable disconnected/bad. **No:** Refer to Symptom 3.
3. RXD1 LED on DPEIB, DPRI, or POEIB does not blink.	3A. Is the Power LED on the DPEIB, DPRI, or POEIB lit?	3A. **Yes:** Refer to Check 3B. **No:** Dual Printer not powered up, DPEIB not plugged in, POEIB not plugged in, internal cables to DPRI not connected, bad DPEIB, DPRI, POEIB, or power supply.

Symptom	Check	Possible Cause
	3B. Does the TXD1 LED on the DPEIB, DPRI, or POEIB blink?	3B. **Yes:** Bad DPEIB, DPRI, POEIB, or Dual Printer. (Check cabling/interface boards to/in Dual Printers or 8300.) **No:** Fiber optic cable disconnected/bad.
4. TXD1 LED on DPEIB, DPRI, or POEIB does not blink.	4A. Is the Power LED on the DPEIB, DPRI, or POEIB lit?	4A. **Yes:** Refer to Check 4B. **No:** Dual Printer or POEIB not powered up, DPEIB internal cables to DPRI not connected, bad DPEIB, DPRI, POEIB, or power supply.
	4B. Does the TXD1 LED on the local fiber interface blink?	4B. **Yes:** Fiber optic cable disconnected/bad, bad DPEIB, DPRI, or POEIB. **No:** Refer to Symptom 1.
5. RXD1 LED on output module does not blink.	5. Does the RXD1 LED on the local fiber interface blink?	5. **Yes:** 37-pin cable disconnected/bad, bad output module. **No:** Refer to Symptom 2.
6. XP 535 Film processor not working (for 969 HQ Dual Printer system only).	6A. Is the processor on, and are the processor connections correct?	6A. **Yes:** Refer to Check 6B. **No:** Turn on processor, correct cable connections.
	6B. Does the TXD0 LED on the DPEIB blink?	6B. **Yes:** Processor failure, bad 9-pin cable between processor and DPEIB.

Symptom	Check	Possible Cause
6. XP 535 Film processor not working (for 969 HQ Dual Printer system only).	6C. Does the TXD0 LED on the local fiber interface blink?	6C. **Yes:** Fiber optic cable disconnected/bad. **No:** Refer to Check 6D.
	6D. Does the TXD0 LED on the output module blink?	6D. **Yes:** 9-pin cable disconnected/bad, bad local fiber interface. **No:** Bad output module.

8-3. Initialize System Controller NVRAM

Warning

When the power cord is plugged in, hazardous voltages are present in some areas of the 8800. These voltages can cause severe injury or death.

If the MPC will not connect, check the following items:

- Is the cabling correct?
- Is the system controller running (red light is flashing)?
- Is the MPC port in use set to 19200 baud?

If the previous items are all right, perform the following procedure to initialize the system controller and reestablish the MPC connection. NVRAM is initiated at the factory and should normally not be required in the field, unless replacing a system controller board.

1. Open the front door of the 8800.
2. To gain access to the system controller, remove the right front panel from the card cage.
3. Turn on the 8800.
4. Simultaneously press the Reset (red) and Abort (black) switches on the system controller.
5. Release the Reset switch.
6. Wait until the red LEDs turn off.
7. Release the Abort switch.

8. Secure the right front panel to the card cage.

This procedure causes the system controller maintenance port (B) values to be set as follows:

- Internal modem baud set to 2400
- Local connect baud set to 19200
- Number of modem rings set to 4
- Port mode set to Maint
- Boot set to Normal

Refer to MPC help messages for more information on these parameters.

Note

After initializing system controller NVRAM, be sure to set the system clock via MPC.

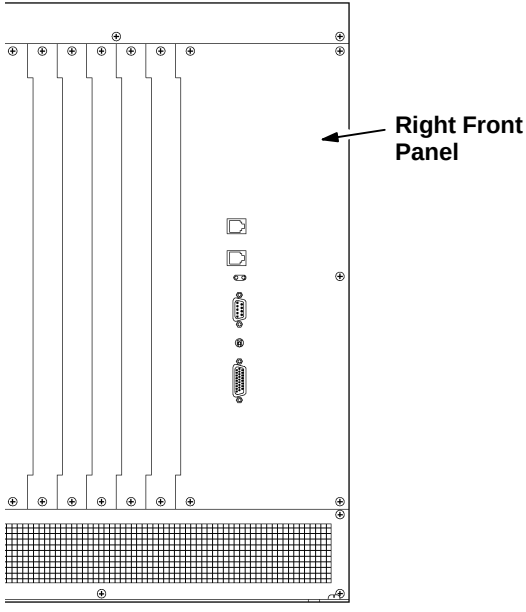
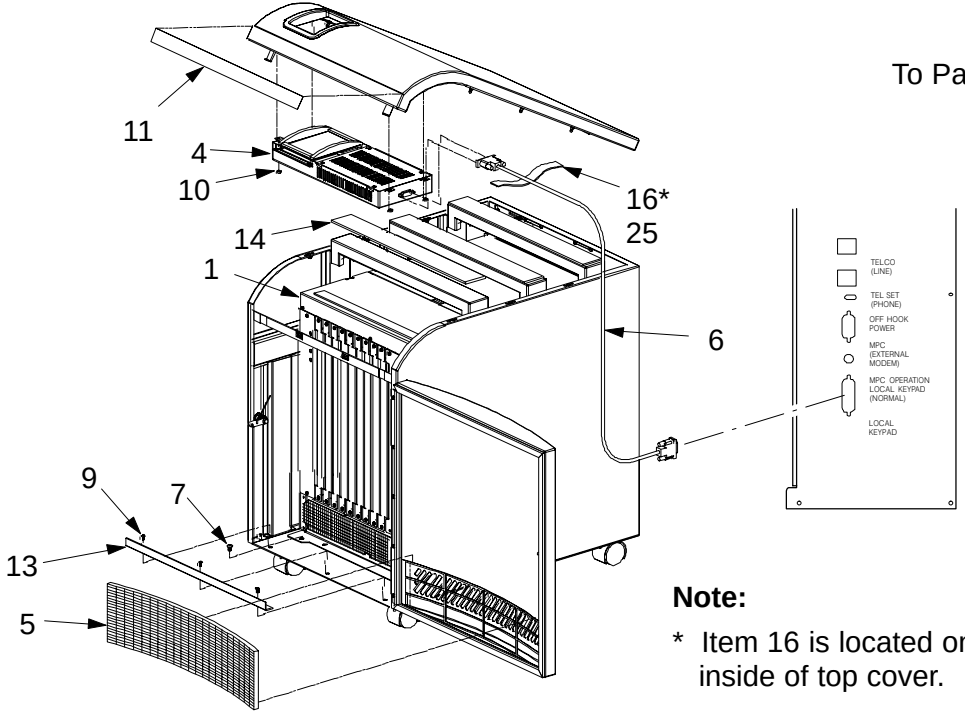


Figure 8-1.

Section 9 – Illustrated Parts Breakdown

Figure 9-1. CABINETRY



To Parts List

Note:

* Item 16 is located on inside of top cover.

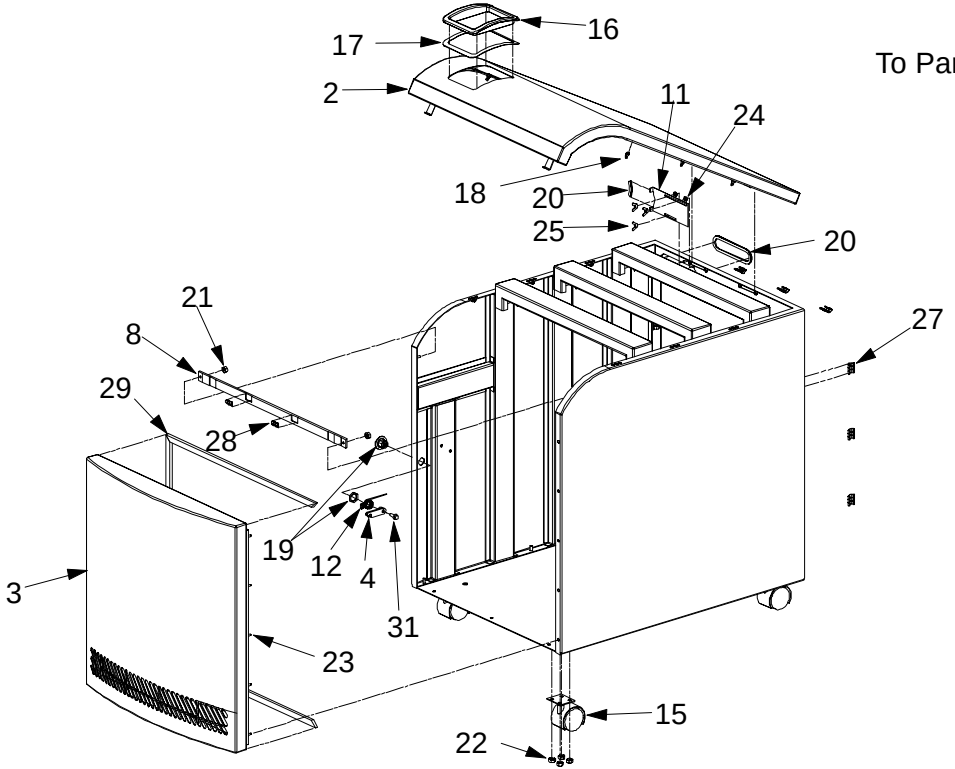
Figure 9-1. CABINETRY

Item No.	Part Number	Description	Qty
1	Not Available	8800 IMS ASSEMBLY (See Figure 4)	1
2 – 3	Not Used		
4	78-8094-9107-5	LOCAL PANEL ASSEMBLY (See Figure 3)	1
5	78-8094-8844-4	FILTER, 6.0 X 19.0	1
6	78-8094-9112-5	CABLE ASSEMBLY, Local Keypad, I/O Interconnect	1
7	26-1003-9522-2	SCREW, Sems, Pan Hd., Phil, Ext. Tooth, 1/4–20 X .500	2
8	Not Used		
9	26-1003-9514-9	SCREW, Sems, Pan Hd., Phil, Ext. Tooth, 8–32 X .375	5
10	26-1006-3701-1	NUT, Keps, Ext. Tooth, 6–32	4
11	70-0701-4367-5	STRIP, Accent, Kodak yellow	1
12	Not Used		
13	78-8094-8821-2	CROSSBAR, Bottom	1
14*	26-1001-9299-1	TAPE, Foam, 2.00” Wide X .125” Thick, 5’ Long	AR
15	Not Used		
16*	26-1011-7021-0	FASTENER, Loop, 1.0” Wide, Adhesive back, Nylon, Black	AR
17 – 24	Not Used		
25*	26-1002-8943-3	FASTENER, Hook, 1.0” Wide, Press Sens backing, Nylon, Black	AR

Note

* These items are stocked in bulk quantity. DO NOT order more than 1.

Figure 9-2. FRAME ASSEMBLY



To Parts List

Figure 9-2. FRAME ASSEMBLY

Item No.	Part Number	Description	Qty
1	Not Used		
2A	78-8094-9071-3	COVER, Top, or OEM (includes items 16 and 17)	1
2B	78-8094-9076-2	COVER, Top, GE (includes items 16 and 17)	1
3A	78-8094-9072-1	DOOR, or other OEM's (includes logo)	1
3B	78-8094-9078-8	DOOR, GE (includes logo)	1
4	78-8094-8815-4	PAWL, Latch	1
5 - 7	Not Used		
8	78-8094-8820-4	CROSSBAR, Top	1
9 - 10	Not Used		
11	78-8094-8830-3	CLOSURE, Cable Entry	1
12	78-8094-8834-5	SPRING, Latch	1
13 - 14	Not Used		
15	26-1011-6385-0	CASTER	4
16**	Not Available	BEZEL, Display (included with item 2)	1
17**	Not Available	GASKET, Flange (included with item 2)	1
18	26-1006-0058-9	PIN, Tinnerman	6
19	26-1011-6845-3	FASTENER, Quarter-Turn	1
20*	26-1002-6586-2	GROMMET	AR
21	26-1002-8200-8	NUT, Keps, 1/4–20	2
22	26-1000-6654-2	NUT, Keps, 8–32	16
23	26-1001-8627-4	SCREW, Cap, Hex Hd., 6–32 X .250	5

Figure 9-2. FRAME ASSEMBLY

Item No.	Part Number	Description	Qty
24	12-7991-1506-3	NUT Hex, 6–32	3
25	26-1002-3197-1	NUT, Wing, 6–32	2
26	Not Used		
27	26-1011-6585-5	SHIELD, .6” Wide, Slot Mount	AR
28	26-1011-7029-3	SHIELD, .37 X .14 X .003, Teardrop shape with adhesive	AR
29*	26-1011-7028-5	GASKET, Foam, EMI Shield, .376 X .250	AR
30	Not Used		
31	12-7999-5457-8	SCREW, Cap, 10–32 X .5	1

Note

* These items are stocked in bulk quantity. DO NOT order more than 1.

**These items are not stocked as individual parts and are included with item 2.

Figure 9-3. LOCAL PANEL ASSEMBLY

To Parts List

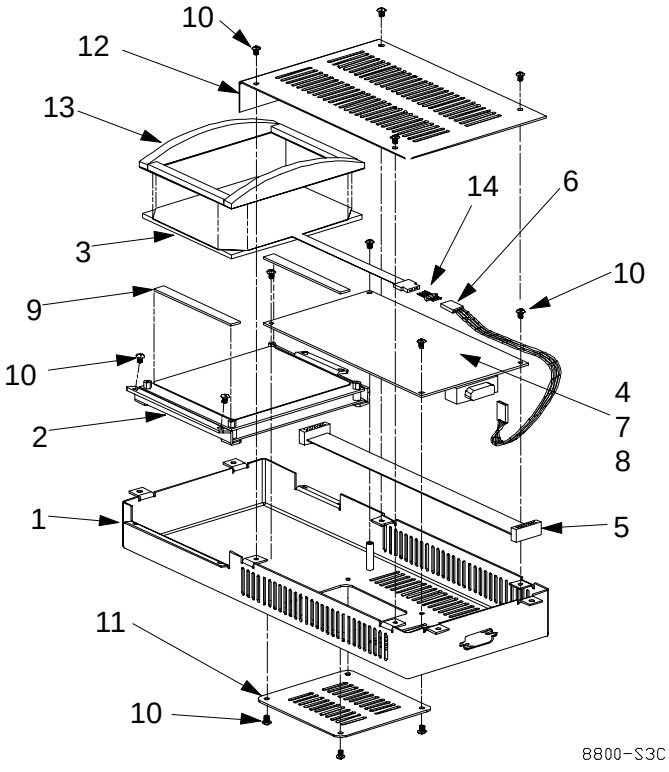


Figure 9-3. LOCAL PANEL ASSEMBLY

Item No.	Part Number	Description	Qty
0	78-8094-9107-5	LOCAL PANEL ASSEMBLY	1
1*	Not Available	BOX, Display	1
2*	Not Available	CIRCUIT BOARD,	1
3*	Not Available	SCREEN, Touch	1
4*	Not Available	E.L. PANEL ASSEMBLY	1
5*	Not Available	CABLE ASSEMBLY, 16-pin Local Display	1
6*	Not Available	HARNESS ASSEMBLY, Touch Screen Extension	1
7*	Not Available	EPROM PROGRAMMED ASSEMBLY, Local Keypad, U1	1
8*	Not Available	EPROM PROGRAMMED ASSEMBLY, Local Keypad, U2	1
9*	Not Available	MASK/SPACER	2
10	26-1003-9506-5	SCREW, SEMS, Pan Head, Phil, Ext Tooth, 6–32 X .250	16
11*	Not Available	COVER, Display Box (Bottom)	1
12*	Not Available	COVER, Display Box (Top)	1
13*	Not Available	SEAL, Touch Pad	1
14*	Not Available	CONNECTOR, Strip	1

Note

* These items are not stocked as individual parts and are included with item 0.

Figure 9-4. 8800 IMS

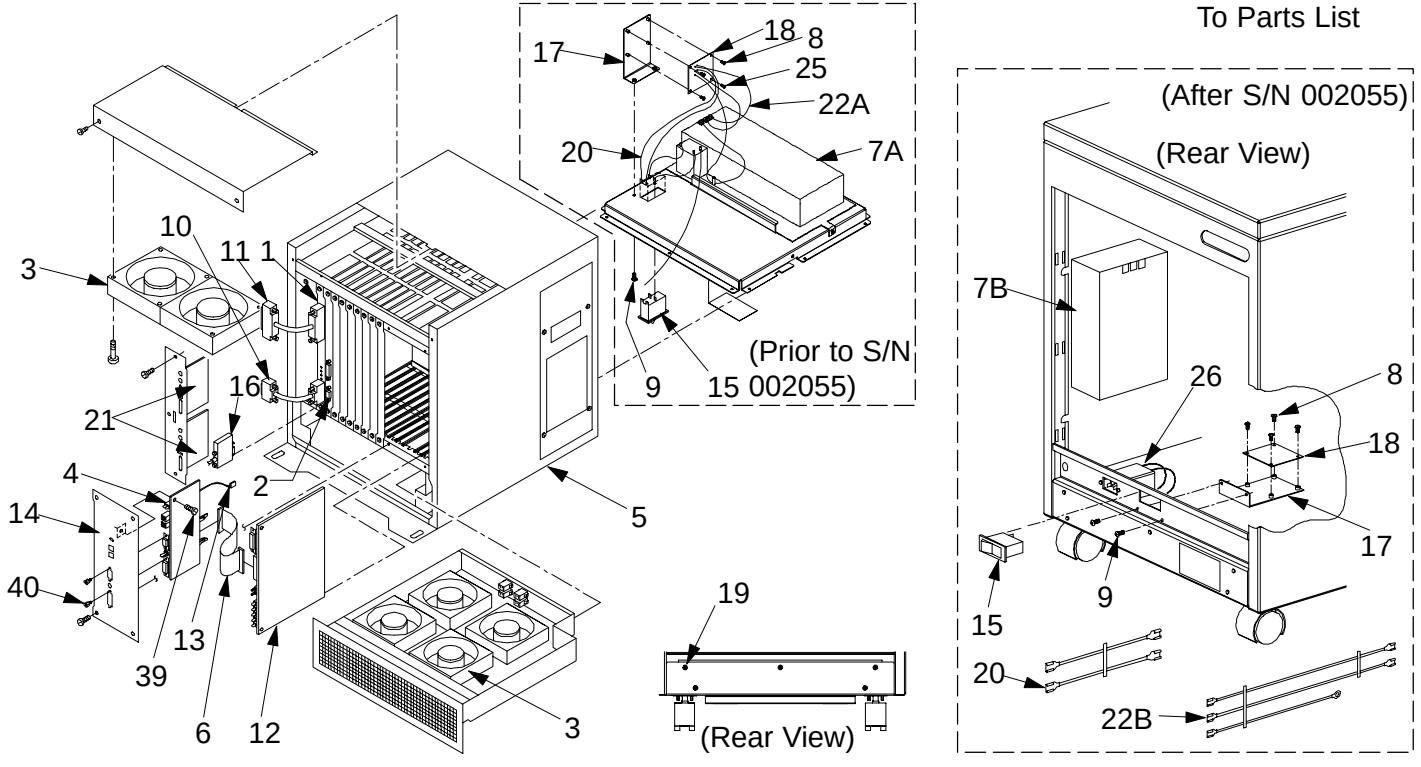


Figure 9-4. 8800 IMS

Item No.	Part Number	Description	Qty
1	78-8079-0724-7	OUTPUT MODULE	1
2A	78-8077-4146-3	INPUT MODULE, (32MP, 9-bit) (old)	1
2B	78-8063-3959-0	INPUT MODULE, (32MP, 12-bit) (old)	1
2C	78-8094-9132-3	INPUT MODULE, (32MP, 9-bit) (Fiber only)	1
2D	78-8094-9136-4	INPUT MODULE, (32MP, 12-bit) (Fiber only)	1
2E*	78-8079-9798-2	INPUT MODULE/MEMORY EXPANSION BOARD KIT, (64MP, 9-bit) (includes fiber only input module and memory expansion board)	1
2F*	78-8079-0735-3	INPUT MODULE/MEMORY EXPANSION BOARD KIT, (64MP, 12-bit) (includes fiber only input module and memory expansion board)	1
3	78-8077-4189-3	FAN, Top/Bottom	6
4A	78-8056-4251-5	MODEM/LOCAL PANEL INTERFACE (US)	1
4B	78-8056-4254-9	MPC/LOCAL PANEL INTERFACE (OUS)	1
5**	78-8094-9150-5	CARD CAGE, (Multi-User) (Includes IMS Backplane)	1
6	78-8071-8319-5	HARNESS, System Controller to Modem	1
7A	78-8077-4188-5	POWER SUPPLY with Fan (Prior to S/N 002055)	1
7B	96-0000-1962-8	POWER SUPPLY with Fan (After S/N 002055)	1
8	26-1003-6372-5	SCREW, Sems, Pan Hd., Phil., Ext. Tooth, 6–32 X .312	4
9	26-1003-9514-9	SCREW, Sems, Pan Hd., Phil., Ext. Tooth, 8–32 X .375	2
10	78-8094-9115-8	CABLE, Output Module to Local Fiber Interface, 9-pin, 16” Long, (969 DP or 8300 only)	1
11	78-8077-4186-9	CABLE, Output Module to Local Fiber Interface, 37-pin	1

Figure 9-4. 8800 IMS

Item No.	Part Number	Description	Qty
12	78-8063-3919-4	SYSTEM CONTROLLER ASSEMBLY	1
13	78-8077-4243-8	POWER HARNESS ASSEMBLY, Modem/Local Panel Int.	1
14	78-8071-0196-5	PANEL, Right, Front	1
15	26-1011-6844-6	CIRCUIT BREAKER, 2 Pole, 10A, 250V	1
16	78-8056-4248-1	PWA, Switchable Fiber Convertor	1
17	78-8094-8827-9	BRACKET, MOV Board	1
18	78-8056-4274-7	PWA, MOV Board	1
19	26-1003-9515-6	SCREW, Sems, Pan Hd., Phil., Ext. Tooth, 8–32 X .500	5
20	78-8094-9110-9	HARNESS ASSEMBLY, MOV Board to On/Off Switch	1
21	78-8056-4245-7	PWA, Local Fiber Interface (one for each Dual Printer connected)	2
22A	78-8094-9111-7	HARNESS ASSEMBLY, IEE Power Supply to MOV (Used with Item 7) (Prior to S/N 002055)	1
22B	96-0000-1970-1	HARNESS ASSEMBLY, IEE Power Supply to MOV (Used with Item 7) (After S/N 002055)	1
23–25	Not Used		
26	26-1004-3438-5	TERMINAL, .250 X .032 X .855, 16–14 AWG (After S/N 002055 only)	2
27–33	Not Used		
34A	26-1011-4940-4	POWER CORD, US, 18 AWG X 10', 125V, 10A, UL/CSA (Not Shown)	1
34B	78-8077-4272-5	POWER CORD, OUS (Not Shown)	1

Figure 9-4. 8800 IMS

Item No.	Part Number	Description	Qty
35–38	Not Used		
39	26-1003-9551-1	SCREW, Mach., Sems, Phil., 8–32 X .250	1
40	26-1004-3945-9	FASTENER, 4–40 Thd. X .5	2

Note

* Order this “kit” if replacing a 64MP Input Module (Memory Expansion Board is not available separately).

**Card Cage includes: IMS Backplane, Power Supply, Top/Bottom Fans, and System Controller Board. Contact Service Engineering before ordering this part.

Figure 9-5. EXTERNAL SYSTEM INTERFACES/CABLING

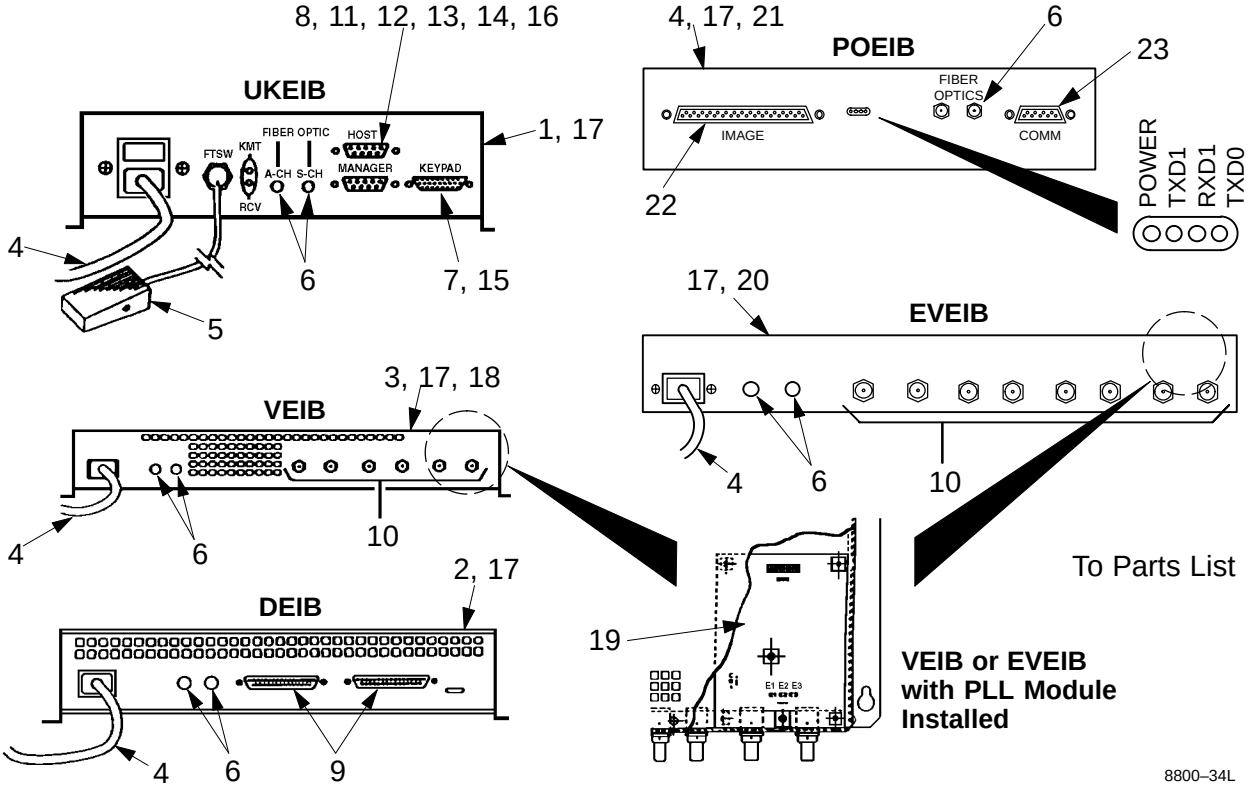


Figure 9-5. EXTERNAL SYSTEM INTERFACES/CABLING

Item No.	Part Number	Description	Qty
1	78-8077-4135-6	UNIVERSAL KEYPAD EXTERNAL INTERFACE BOX (UKEIB) (The Keypad Fiber Electronic Interface Box (KFEIB) is not stocked as a service part. If a KFEIB fails, order a UKEIB to replace it.)	1
2	78-8077-4201-6	DIGITAL EXTERNAL INTERFACE BOX (DEIB)	1
3	78-8077-4199-2	VIDEO EXTERNAL INTERFACE BOX (VEIB) (Do not order a VEIB to replace an installed EVEIB. Order an EVEIB – Item 20A or 20B)	1
4A	78-8063-3751-1	POWER CORD ASSY (U.L./CSA Rated Only)	1
4B	78-8077-4272-7	POWER CORD ASSY (International)	AR
5	78-8075-2572-6	FOOTSWITCH	AR
6A	78-8075-2605-4	CABLE, Fiber Optic, 3m (10 Ft.)	AR
6B	78-8063-3684-4	CABLE, Fiber Optic, 10m (33 Ft.)	AR
6C	78-8063-3685-1	CABLE, Fiber Optic, 30m (98 Ft.)	AR
6D	78-8063-3686-9	CABLE, Fiber Optic, 60m (198 Ft.)	AR
6E	78-8063-3687-7	CABLE, Fiber Optic, 100m (330 Ft.)	AR
6F	78-8075-2606-2	CABLE, Fiber Optic, l50m (495 Ft.)	AR
6G	78-8075-2607-0	CABLE, Fiber Optic, 200m (660 Ft.)	AR
6H	78-8075-2608-8	CABLE, Fiber Optic, 250m (825 Ft.)	AR
6J	78-8063-3688-5	CABLE, Fiber Optic, 300m (1090 Ft.)	AR
6K	78-8063-3689-3	CABLE, Fiber Optic, 500m (1652 Ft.)	AR
6L	78-8063-3956-6	CABLE, Fiber Optic, 1000m (3300 Ft.)	AR

Figure 9-5. EXTERNAL SYSTEM INTERFACES/CABLING

Item No.	Part Number	Description	Qty
7	78-8077-4097-8	CABLE, Keypad, 3m (10 Ft.)	1
8A	78-8053-4646-3	CABLE, RS232, 15 Ft.	AR
8B	78-8053-4647-1	CABLE, RS232, 25 Ft.	AR
8C	78-8053-4648-9	CABLE, RS232, 50 Ft.	AR
9A	78-8053-4697-6	CABLE, Digital, 3m (10 Ft.)	AR
9B	78-8053-4134-0	CABLE, Digital, 10m (33 Ft.)	AR
9C	78-8053-4135-7	CABLE, Digital, 30m (98 Ft.)	AR
9D	78-8053-4139-9	CABLE, Digital, 60m (197 Ft.)	AR
10A	78-8053-4695-0	CABLE, Analog, 3m (10 Ft.)	AR
10B	78-8053-4059-9	CABLE, Analog, 10m (33 Ft.)	AR
10C	78-8053-4034-2	CABLE, Analog, 30m (98 Ft.)	AR
10D	78-8053-4033-4	CABLE, Analog, 60m (197 Ft.)	AR
11	78-8071-8331-0	RS232 to UKEIB Host Contr. Adapt. Cable (25-pin to 9-pin)	AR
12	78-8077-4159-6	RS422 to UKEIB Host Contr. Adapt. Cable (37-pin to 9-pin)	AR
13	26-1007-4918-8	ADAPTER, RS422 Connector (Male/Male)	AR
14	26-1007-0924-0	ADAPTER, RS422 Connector (Female/Female)	AR
15	78-8063-4088-7	DDIU to UKEIB Adapter Cable (37-pin M to 26-pin M)	AR
16A	78-8075-2603-9	CABLE, Genesis (GE), 10m (33 Ft.)	AR
16B	78-8075-2542-9	CABLE, Genesis (GE), 30m (98 Ft.)	AR
16C	78-8075-2543-7	CABLE, Genesis (GE), 60m (197 Ft.)	AR
16D	78-8075-2604-7	CABLE, Genesis (GE), 100m (330 Ft.)	AR

Figure 9-5. EXTERNAL SYSTEM INTERFACES/CABLING

Item No.	Part Number	Description	Qty
17	78-8077-4026-7	POWER SUPPLY, EIB	1
18	78-8063-3672-9	FAN, VEIB	1
19	78-8077-4363-4	PLL, 110 MHZ (Used in VEIB or EVEIB)	AR
20A	78-8079-0747-8	ENHANCED VIDEO EXTERNAL INTERFACE BOX (EVEIB with external Sync)	1
20B	78-8094-8860-0	ENHANCED VIDEO EXTERNAL INTERFACE BOX (EVEIB without external Sync)	1
21A	78-8079-9807-1	PROTOCOL OUTPUT EXTERNAL INTERFACE BOX (POEIB) US	1
21B	78-8114-2457-7	PROTOCOL OUTPUT EXTERNAL INTERFACE BOX (POEIB) OUS	1
22	96-0000-2994-0	CABLE ASSEMBLY, POEIB Image	1
23	78-8075-2602-1	CABLE ASSEMBLY, KEIB, 4 wire	1

Note

The Keypad Fiber Electronic Interface Box (KFEIB) is not stocked as a service part. If a KFEIB fails, order a UKEIB to replace it (See Item 1).

Figure 9-6. KEYPAD

To Parts List

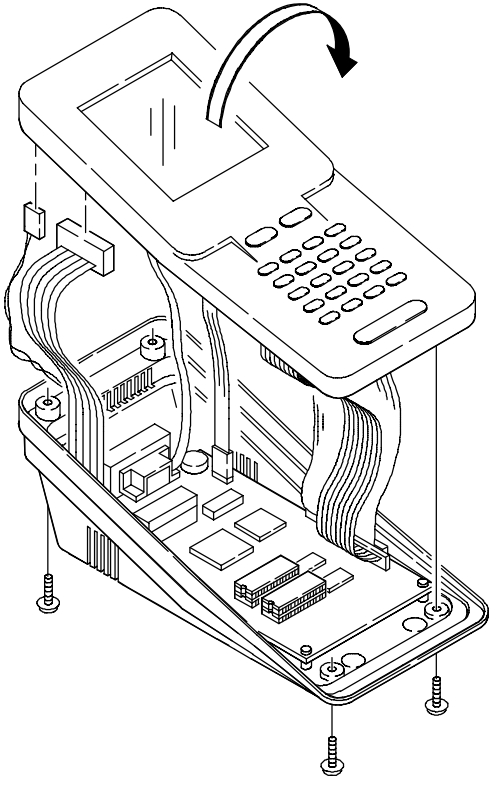


Figure 9-6. KEYPAD

Item No.	Part Number	Description	Qty
1	78-8077-4087-9	KEYPAD, User	AR
2	78-8077-4097-8	CABLE, Keypad, 3m (10 ft.)	AR
3	78-8079-0111-7	KEYPAD, Translator, GE Sytec (5115-Y)	AR